

THE IRON AGE

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More Metal in Toys

How the Metal Trades Help to Fill the Christmas Stocking and Trim the Christmas Tree

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THIS is no romantic story of a Santa Claus industry. There will be no references to Kris Kringle craftsmen engaged in a labor of love in dimly lighted shops—no details of designs suggested by crippled shut-ins. As a matter of fact, it is really not a Christmas story at all.

For the making of toys is becoming less and less a holiday business and more and more an all-year-round affair. True, more toys are sold in the month of December than at any other time; nevertheless a great change has taken place since the days when a dollar fire-engine or a fifty-cent drum sent youngsters into the seventh heaven of delight on Christmas morning. Stockings aplenty are still hung by the chimney with care—but fewer of the toys get into them every year. Many of them have to be brought in by the expressman and his helper.

Toys are bigger, better, more entertaining and more expensive—as any visit to a toy department will prove. A generation ago, the toy jobber practically did not exist who would carry a toy retailing at more than one dollar; today most of them will handle playthings up to fifty times that value.

There are three reasons for the changes which have taken place in the toy industry—changes which have transformed tiny toy-shops into modern mass-production factories, increased the consumption of metals and the need for metal working many times over and, incidentally, altered the habits of a fair proportion of our population.

The first of these reasons may be found in our great prosperity. Without the ability to purchase expensive toys, there would not be the incentive to make and sell them. Few foreign countries are in a position to spend as much money for playthings as these United States—at least, in numbers large enough to make the production of fifty-dollar toy automobiles as practical a venture as it is in this country. High wages, steady employment and the saving grace of thrift has enabled this country to pay more money for its children's playthings.

Age Limit Has Widened

THE third reason for the marked expansion in toy girl enjoy playthings until they are fifteen years old, or after, whereas a generation ago, few children over ten were content with toys. Note the use of that word "playthings"—in it lies the secret of this second reason. Not so long ago "toys" meant cheap, flimsy gimcracks that were used but a few days (and were incapable of use much longer) and were generally relegated to the ash-barrel by New Year's. Today even

the cheaper playthings are capable of making a lasting impression because they are themselves lasting.

And for this transformation, metal is largely responsible. Metal wheels instead of wooden spokes, metal automobile bodies instead of wooden coaster wagons and metal erection and construction toys instead of wooden blocks—these are but indications of the effect which the demand for more and better toys is having on the manufacturing end of the business.

And just as the market has grown on account of the broadening of the age limit, so the universal trend toward feminism has reached the toy industry and helped to run its annual sales up to the \$200,000,000 mark which it is expected to reach this year. The vigorous out-of-doors girl—the Camp Fire or Girl Scout member—is no longer content with dolls and tea sets. She must have a scooter and a coaster-wagon in order to compete with her brothers on an equal footing. She plays ball, skates and uses as many outdoor playthings as any boys of her age.

Better Toys Mean Larger Sales

THE third reason for the market expansion in toy demand during the last twenty years lies in the improvement in toy quality for which the metal trades are so largely responsible. In the days when most toys were made of wood and by hand, output was limited and price reductions by means of mass production were unknown. Today the modern toy factory has modern machinery and is likely to stamp or punch thousands of parts a day where a few dozen would have been slowly cut by hand dies not many years ago.

"The toy industry moves as do other industries by filling a new need as it arises or by creating a new demand by designing new toys that leap ahead into an untried field," said H. D. Clark of the Toy Manufacturers of the U. S. A., the industry's trade association. "We used to have only the iron trains that were moved when pulled by a string—made of cast iron. This changed into the mechanical train that ran by clockwork and in turn was followed by the reproduction of our latest electrical railroad equipment. But you must not believe the little iron train has been forgotten. Younger children are today as thrilled by it as were their fathers twenty-five years ago, only they outgrow it sooner and demand a more modern outfit.

"Children seem to outgrow all playthings sooner than they did a few years ago. Just as subjects which were once taught in colleges are now given in high schools and as high school courses are getting into lower grades, so the age limit on various toys seems to be getting lower and lower each year. This means that



many new toys must be designed to take the place of these outgrown toys, especially from the age of ten up."

More Metal Toys Each Year

AND because large numbers of toys can, in many cases, be made more economically by stamping or punching from metal blanks, the proportion of metal toys to the total quantity of toys sold seems to be increasing each year. The demand for more durable playthings is, of course, one factor which leads to the increasing use of sheets, tin plate, brass and aluminum. But the ease with which metal can be worked and the methods which have been designed for quantity production by automatic machines has given the "edge" to metal toys in recent years.

A good example of this is the wheel used on coaster-wagons, scooters and all the large line of toys known as wheel goods. Up to a few years ago the wooden wheel and the wire wheel were the only contenders in this field. Then came the introduction of the disk wheel into the automotive industry and its application

plants and ever-growing requirements for metal plainly show.

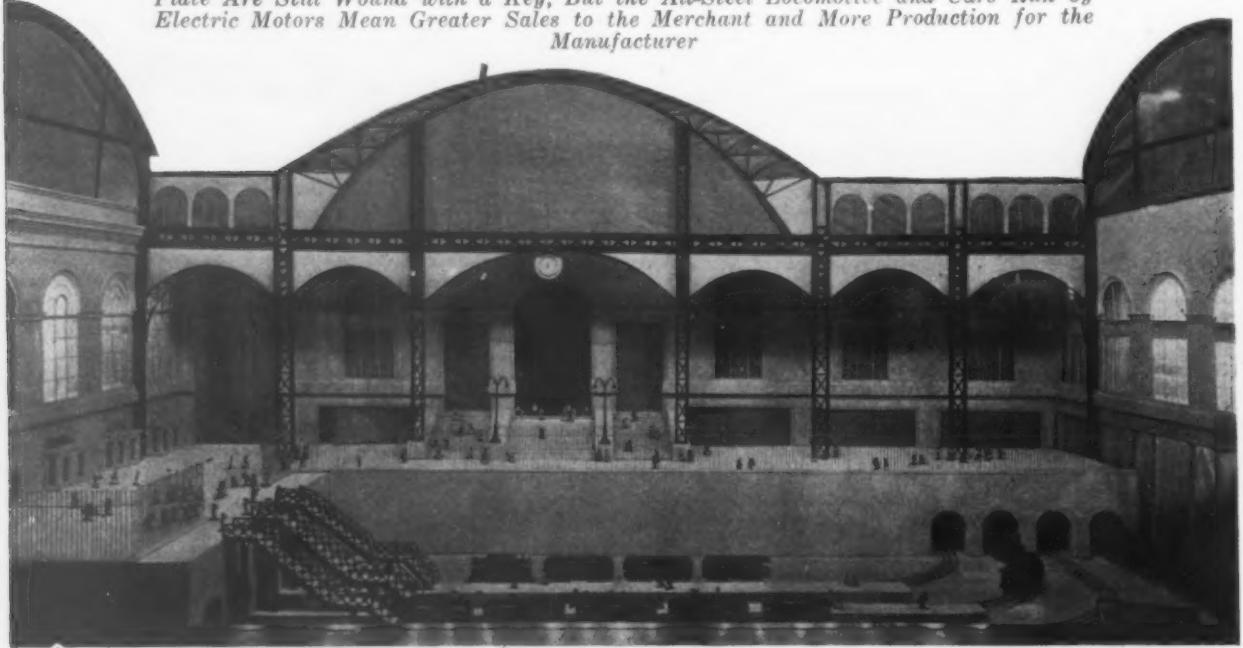
Two-Purpose Playthings

IT is this ability to produce playthings of improved quality at a commercial price by means of mass production which has been largely responsible for the development of what may be called utility-playthings. This is a strictly American development and has taken the playthings business quite out of the Santa Claus class, permitted the all-year-round manufacture and sale of toys and resulted in a more liberal expenditure of money by American parents.

Some of these playthings are very easily recognized as having an educational value. Among the first of this type of toy were the various styles of construction materials, usually made of stamped metal. There are now several makes of these construction toys on the market, and they have, in effect, continued the sale of wooden blocks up into the \$50 class and through the ages of fifteen or sixteen.

The model machine shop which is illustrated at the

The Toy Train of Cast Iron Is Still Made, Mechanical Trains of Lithographed Tin Plate Are Still Wound with a Key, But the All-Steel Locomotive and Cars Run by Electric Motors Mean Greater Sales to the Merchant and More Production for the Manufacturer



to playthings. The pressed steel wheel found instant favor.

Now the equipment necessary for making of wire wheels, which were most popular just prior to the introduction of the disk wheel, cost quite a good deal and this had the effect of preventing over-expansion of the industry through mushroom producers who had insufficient capital and were therefore most likely to upset commercial conditions.

With the introduction of the disk wheel, large numbers of metal-working plants were in a position to supply, and did supply, steel wheels to all comers. The advantage enjoyed by the owners of wire wheel equipment vanished overnight and, as a consequence, there are several new makers of wheel goods already in the field.

Prior to the war, when America bought most of her toys with a foreign label, the industry was not well established and was, so far as many metal toys were concerned, a by-product industry. Plants engaged in the conversion of sheet metal or tin plate would often produce a line of toys to take care of their waste and scrap. In many cases they sold the scrap to toy manufacturers.

But when the toy makers of Belgium, Holland, Germany and Austria took up rifles instead of tools, imports dropped and the American industry seized the opportunity to get on a sound footing. Today most of our toys are made in America—and the industry can no longer be called a by-product industry, as large

beginning of this article is typical of this class of educational toys. It is a practical and useful outfit, instructive as well as entertaining. It is intended for "mechanics, tool lovers and their sons" and for "every boy under 90 who likes to make things." There are several other miniature machine outfits on the market, representing bench drills, punch presses, lathes, jigsaw, etc., and all practical as well as amusing. The range of metal products embraced in this educational class is very wide: tool chests, construction sets, miniature railroads, etc. It is in this group that the largest immediate growth may be expected and consequently the largest increase in metal consumption.

With the educational group may be classified the various "model" toys. Some of these are literal off-springs of parent products, for a large electrical goods manufacturer makes toy motors—a phonograph plant produces miniature phonographs, etc. Many of them are made by toy manufacturers and bear the name of the larger product. Sewing machines, automobiles, trucks, carpet sweepers, typewriter and kitchen utensil manufacturers have permitted this exploitation of their name for the advertising value it brings them in return.

Another class of playthings which has expanded very rapidly during the last ten years has been the so-called pull-toys. These are the trucks, fire engines, tractors, dump-wagons, etc., which are pulled along by a cord. Where these were formerly made of lithographed tin plate, many of them are now made out of

regular automobile black sheets, thus giving strength and durability which permits the toy to be used outdoors. They can be made larger and are steadily being produced in larger sizes. Derricks, hoists, bucket carriers and other mechanical devices too numerous to mention have already been produced out of this heavier metal for sand-pile or outdoor use.

Heavier Metal Used

THIS trend toward heavier metal may be seen in many lines of the toy business. In the manufacture of electric trains, for instance, the better grade sets are made of much better and heavier material than was the case a few years ago. Cars and locomotives are made of sheets, the frames are punchings, wheels are die cast with nickel steel rims, bearings are phosphor bronze, gears sometimes are cut from regular gear blanks by automatic gear cutters and all of the parts are made larger, stronger and heavier than was the case when the first electric trains rumbled around the dining-room floor on Christmas morning.

There are just as many sets of lithographed tin plate as there were ten years ago, but most of the new business has gone to the makers of heavier and more lasting playthings. Many toys and playthings of the Santa Claus type are now made of tin plate which formerly were made of wood. The wooden soldier has largely given way to the tin soldier, and the cast iron soldier has held his own. One of the largest producers of such toys uses every year large quantities of 20 x 28-in. tin

plate for stamped playthings and the quantity is increasing every year.

Outdoor Toys of Metal

METAL is being used more and more in outdoor playthings, too. The all-metal scooter and coaster-wagon are forerunners in this field. The output of skates, metal skis, sleds and what may be called juvenile sporting goods takes more metal every year. The use of metal for automobiles, velocipedes, sidewalk bicycles (new this year) and all sorts of wheel goods may be expected to show a steady increase.

With constant improvement in the machinery and methods of automatic machine production, the advantages of metal for playthings should be accelerated in the near future. Add to this fact a continued willingness of parents to pay \$50 or more for playthings, and a rapidly growing population and it does not require a clairvoyant to see that the present retail value of \$200,000,000 a year will soon be materially enlarged.

Some 3000 lines of playthings will be shown at the great annual toy fair held in New York this February. It is a safe assertion that a larger proportion of these toys will be made of metal than last year, and that the year after that a still larger proportion of metal toys will be found.

The phrase "more and better toys" is not a slogan of the manufacturers. It is the expression of a definite tendency in the industry which has a growing significance for those who make and work in metal.

THE GOVERNMENT DOLLAR

Where It Comes from, Who Spends It and Where It Goes

Talk of Federal income and outgo is often so beclouded by millions and billions that it is hard to get a clear understanding of just what the Government collects and what it spends on the various departments. The Bureau of the Budget appreciates this and has prepared the following set of figures showing what happens to a typical Government dollar.

Where It Comes From

Source	Amount (Cents)
Income and profit tax.....	49.16
Miscellaneous internal revenue	22.85
Customs revenue	14.43
Interest, premium and discount.....	4.95
Fees, fines, penalties and forfeitures.....	0.84
Repayments on investments.....	1.62
Trust fund receipts	2.16
Other miscellaneous receipts	3.99

Where It Goes

Destination	Amount (Cents)
General functions of Government.....	3.35
National defense	16.32
Military pensions, retirement pay, annuities, World War allowances and life insurance claims	16.55
Public works	5.60
Promotion, regulation and operation of marine transportation	1.88
Other civil functions	7.40
Refunds	4.91
Public debt retirement from ordinary receipts	14.76
Interest on public debt	22.75
Trust funds	6.48

Who Spends It

Organization	Amount (Cents)
Legislative establishment	0.46
Executive office	0.01
Veterans' Bureau	10.52
Other independent establishments	1.61
Agriculture	4.33
Commerce	0.86
Interior	7.66
Justice (including judicial)	0.70
Labor	0.25
Navy	9.55
Deficiency in postal revenues	0.71
State	0.47
Treasury	8.78
Public debt retirement	14.76
Interest on public debt	22.75
Investment of trust funds	5.60
War, including Panama Canal	0.94
District of Columbia	1.04

It will be noted that, while the War and Navy departments together account for about 20 cents out of every dollar spent by the Government, money spent

for the development of trade and production through the Departments of Agriculture and Commerce amounts to but slightly over 5 cents out of every dollar.

Advertising in Economy of Marketing

Results of survey of market analysis, advertising and advertising mediums, made by the Chamber of Commerce of the United States, place advertising in the ranks of business economies, when properly handled and directed. The special committee making the survey lists the advantageous effects of proper advertising as:

Decreasing the cost of selling;
Lowering the cost of production, on account of increased volume;
Lowering prices to consumers, and thereby raising the standard of living;
As a by-product, aiding in the education of the general public.

Large wastes in advertising are found, however, "due to inadequate or uninformed study of markets and to imperfect coordination of advertising with other activities."

Mechanism of Scale Formation in Steam Boilers

Investigation is being conducted at the Pittsburgh experiment station of the Bureau of Mines to determine whether the character of the precipitates forming in boilers may be made to assume a form in which they do not attach themselves to the walls; and if the material in the boiler wall exercises any influence. Data have been obtained on the non-condensable gases carried off in the steam, and the correct relationships to be maintained when carbonate becomes unstable and phosphate must be used in boiler water conditioning.

The use of phosphate may form objectionable deposits. This condition is being looked into. Further, indicators used in titrating boiler waters do not necessarily represent the true phosphate or carbonate concentration. Means of controlling this indication are being investigated. Conditions which may bear on wet steam are being watched, in the hope that definite information may be acquired on the factors influential in wet steam development, and thereby control be obtained over them.

Tantalum Rated Equal to Platinum-Iridium as a Resistance Metal

Tantalum is showing "astonishing properties" as a chemical engineering material, declares Prof. James R. Withrow, head of the department of chemical engineering in Ohio State University, Columbus. In a statement made public through the American Chemical Society, Professor Withrow compares it with platinum and platinum-iridium.

Tantalum, he says, lasts 1600 times as long as platinum, while it is one-twentieth cheaper. Of the experiments at the university, called new in this field, Professor Withrow's statement says:

The chemist looks upon platinum as one of his most resistant metals to corrosion. Its use in jewelry, however, is damaging chemical engineering and research. This has stimulated engineering devices to eliminate its use entirely. It has almost disappeared from the apparatus of manufacturing in the chemical industries. Its expensiveness, due to its use in jewelry, influences the cost of nitric acid from atmospheric nitrogen, which might be greatly reduced or more extensively made if platinum were not as expensive as a catalyst.

The new metal, tantalum, has not yet shown any value as a catalyst, but it can be used as an engineering material and so far has developed to be almost as valuable in resistance, the experiments at Ohio State University show, as platinum-iridium, one of the most resistant alloys known. For instance, platinum is found to lose 1 gram per 100 sq. cm. in electrolytic corrosion in 60 hr., while tantalum requires 100,000 hr. for the same loss and platinum-iridium 125,000 hr. The half life of a No. 27 Birmingham wire gage of cathode thickness of platinum was 114 days, whereas tantalum would only be one-half gone at the end of 525 yr. and platinum-iridium at the end of 656 yr. In spite of this great saving, tantalum is about one-twentieth as expensive in first cost as platinum. Platinum-iridium costs, today, \$4,330 per kg.; platinum, \$4,000 per kg., and tantalum sheet, \$250 per kg. If tantalum investigation continues as favorable, a great contribution to chemical engineering materials will be made.

Birth of the Canadian Iron Industry

The British Empire Steel Corporation, in its weekly bulletin for employees dated Dec. 12, publishes the history of the development of the iron industry in Canada. It was in St. Maurice Valley that the existence of iron ore was first discovered, the discovery having been made as early as 1667, or perhaps before that. Frontenac mined some ore there five years later and samples were tested in France and found to be of workable quality.

In 1730 M. Francheville was granted a license by Louis XIV of France, together with a subsidy of 10,000 livres to work the St. Maurice iron ore mines. The project contemplated the construction of a blast furnace which, according to the records, does not seem to have succeeded, as in 1735 he surrendered his rights to the French Government. Some years later another license and subsidy were given to La Compagnie des Forges, which made not only the iron kettles which were needed by the pioneers for boiling potash and sugar, but furnished the French Government with cannon and mortars for military enterprises. In 1743 the works again reverted to the French Government and was operated by the Government until the country passed into the possession of the British. After the war some of the cannon made by the French were melted and converted into iron bars.

In 1767 the enterprise was rented by the British Government for £25 per annum and for some years was quite successful, until part of the output was put into munitions and sold to the invading American forces, with the proceeds of which the manager decamped to the United States. From 1783 until 1809 the plant was very actively operated, the output including potash kettles, stoves and other castings, and bar iron, of which a considerable quantity was exported. In 1861 the property was again sold by the Government and \$1,700 was the modest price paid for the furnaces, forges, foundries and other buildings.

Operations continued for about 20 years until the supply of suitable ore failed and it became increasingly difficult to procure a supply of charcoal. In 1883, when the plant was abandoned, it was the oldest active iron works on the North American continent.

New Plant to Supply "Crodon" for Chromium Plating

Demand for "Crodon," the chrome alloy plating material developed by Dr. Colin G. Fink, Columbia University, New York, has grown so rapidly that the Chemical Treatment Co., Inc., 26 Broadway, New York, which was incorporated to develop this process, has purchased another plant at Waterbury, Conn., which becomes plant No. 2 of this company's production units.

The Waterbury plant was formerly used as a brass tube mill and some of the equipment will be available for the production of "Crodon." The buildings offer 24,000 sq. ft. of floor space. The plans of the company call for further expansion by the eventual location of other plants in or near other manufacturing centers. The discovery of this new process was described in THE IRON AGE, June 4.

Coke Plant and Blast Furnaces at Philadelphia

At a meeting of engineers at the Engineers Club, Philadelphia, at noon on Tuesday, Dec. 15, Walter Wood, of R. D. Wood & Co., Florence, N. J., cast iron pipe manufacturers, again discussed the advantages of Philadelphia as a location for a by-product coke plant and blast furnaces operated in conjunction. Mr. Wood said:

"We all want cheap gas in Philadelphia for lighting and heating, and gas made by by-product ovens will be the cheapest kind the United Gas Improvement Co. can make. Will the United Gas Improvement Co. put up by-product ovens, thus securing as cheap as possible gas, selling the coke which the ovens produce, thereby furnishing cheap fuel, not only for blast furnaces, but also for the inhabitants of the city?"

Mr. Wood pointed out that the gas business is on the point of large development and he is advocating the construction of a by-product coke plant on the Delaware River at Philadelphia with a battery of four blast furnaces.

Bill Proposes Establishment of Free Ports

WASHINGTON, Dec. 22.—Representative Briggs, Democrat, of Texas, has introduced a bill providing for the establishment of foreign trade zones in ports of entry of the United States. Legislation of this character, sponsored by Senator Jones, of Washington, was passed in the Senate, in 1922, as an amendment to the Fordney-McCumber tariff bill but was struck out in conference. It is not believed that the Briggs bill will be given consideration at the present session of Congress.

Will Build Large Shale Oil Plant

For obtaining oil from shale on a large scale, the Bethlehem Shipbuilding Corporation, Ltd., will build for the N-T-U Co., at a cost of \$400,000, a plant near Santa Maria, Cal. The plant will be built to extract no less than 1000 bbl. of oil per day from oil shale rock. Two years ago the Bethlehem Shipbuilding Corporation built a smaller capacity plant for this company upon the same property. Three 40-ton units have just been added and the contract mentioned is to bring the capacity of the plant up to a capacity of 1000 tons of shale daily.

The National Pressed Metal Society will hold a meeting at the City Club, 315 Plymouth Court, Chicago, on Jan. 11, at 8 p. m. Those interested in pressed metal work are invited.

New Stack for Ferrophosphorus

Lower Portion of Furnace of Special Construction to Prevent Escape of Phosphorus—Large Bell Rigidly Connected with Bell Rod

AMONG blast furnaces recently placed in operation is the new stack of J. J. Gray, Jr., located on the Louisville & Nashville Railroad at Rockdale, Tenn. Although the stack would be considered of small daily capacity among iron producing furnaces, it is of special interest as the only blast furnace in the country in which ferrophosphorus is produced. The manufacture of this alloy, which is extensively used in making sheets and other products is carried out also in electric furnaces, but as Mr. Gray controls patents for making ferrophosphorus in a blast furnace, he decided to produce it on a more extensive scale, and made arrangements to replace his old furnace with a larger and more modern stack.

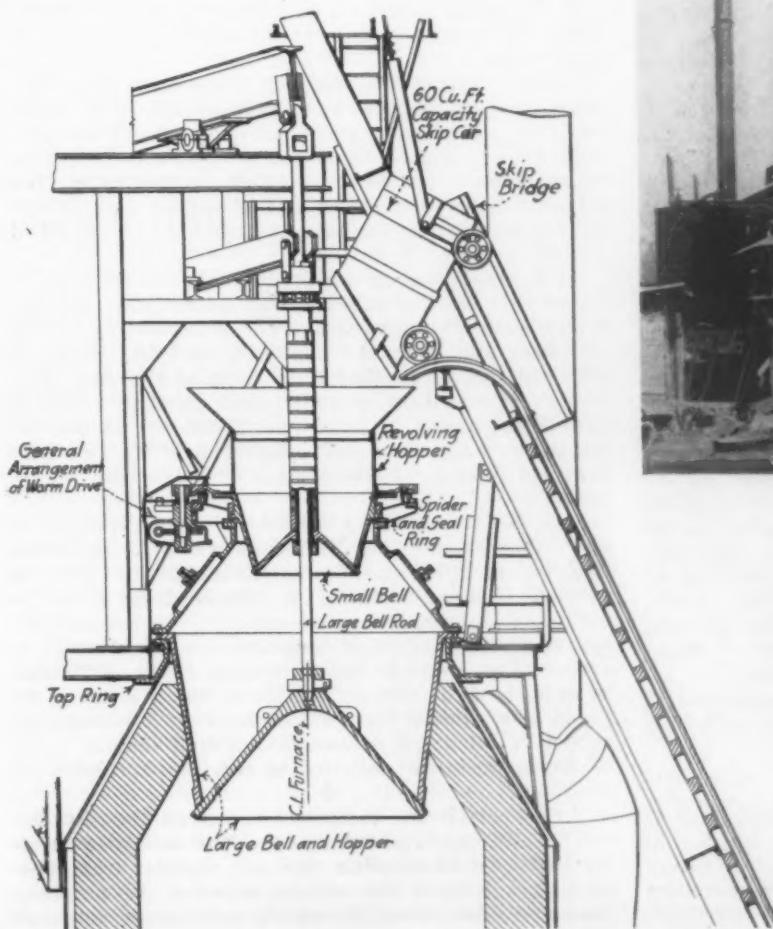
The contract for designing and building the new furnace was awarded to Arthur G. McKee & Co., Cleveland. The dismantling of the old furnace was started in May of this year and the new stack was completed and placed in blast on Sept. 23. It is 70 ft. in height, with 12-ft. hearth and 16-ft. bosh, the bosh angle being 78 deg. 41 min. 25 sec. The furnace shell is of $\frac{1}{2}$ -in. steel plate throughout, with the exception of its bottom ring, which is $\frac{3}{8}$ in. in thickness, and is supported on eight 14-in. 107.5-lb. Bethlehem H-section columns.

Because of the peculiarities and hazards in making ferrophosphorus, and the necessity of preventing any escape of phosphorus during the smelting process, the lower portion of the furnace is of special construction and differs materially from orthodox blast furnace design.

The hearth jacket is of cast iron, approximately 6 in. in thickness, and is made up in eight sections with

machined joints. The tuyere jacket is also of cast iron in eight sections, and is provided with $1\frac{1}{4}$ -in. extra heavy pipe cast integral with it. Both the hearth and tuyere jackets are securely held together by means of forged steel links, which were shrunk on in the field after the sections had been set in place. Cast iron Shannon plates for cooling the bosh, copper tuyeres, cinder notch coolers, etc., were also provided.

The furnace has a 12-ft. 6-in. diameter stock line with an 8-ft. 6-in. diameter large bell and 3-ft. 10-in. small bell. The large bell is rigidly connected with the



(Above) Because of the Hazards in Making Ferrophosphorus and the Necessity of Preventing the Escape of Phosphorus During the Smelting Process, the Lower Portion of the Furnace Is of Special Construction

The Large Bell Is Rigidly Connected with the Large Bell Rod. The entire drive for the revolving distributor is supported from a spider casting, which prevents the drive mechanism from getting out of alignment and facilitates the removal or replacement of the drive as a unit

large bell rod by means of a wedge-shaped key, which insures the bell hanging plumb, and eliminates any swinging of the bell at its connection to the rod.

The furnace top includes a McKee revolving distributor of the latest improved type, with self-contained worm and gear drive running in oil. The entire drive, including the motor and brake, is supported from a spider casting, which prevents the drive mechanism from getting out of alignment, and makes it possible to remove or reinstall the drive as a unit in a minimum period of time.

A jib crane for handling the large bell and hopper, together with bell-operating mechanism and the other auxiliaries usually installed on the furnace top platform, were also provided.

For removing the gas from the furnace two 4-ft. downcomer pipes were provided. These are lined with firebrick, and extend to a brick-lined dust catcher, 12 ft. in diameter by approximately 16 ft. in height, which provides a preliminary cleaning of the gas. Additional cleaning is effected by a Dovel-type washer.

The stock house and filling equipment, which previously had served the old furnace, were of sufficient

size and capacity to fill the new stack, with the exception of the skip bridge and car. The existing bridge was, however, in good condition and it was decided to utilize this as a part of the longer bridge required for the new stack. An old hoist tower remaining from the days when the furnace was hand filled, was converted into a counterweight tower and was also used as a shear leg support for the bridge. No alterations were necessary to the skip pit, although a skip car of larger capacity was furnished.

The equipment previously employed in delivering materials from the bins to the skip pit consisted of a scale car and cable, driven by a steam engine at one end of the stock house. This system has now been improved. The scale car has been converted into an electrically driven unit and a conductor system has been installed in the stock house.

All of the work in connection with designing the new furnace and auxiliaries, together with the furnishing of materials and erection, was executed by Arthur G. McKee & Co., engineers and contractors, Cleveland. The furnace interests were directed by J. J. Gray, Jr., and John W. Walton, plant superintendent.

Conference on Distribution Costs

Elimination of Trade Abuses and Better Coordination of Statistical Research Proposed—Advertising Commended—Survey Shows Variation in Costs*

WASHINGTON, Dec. 22.—With an attendance of approximately 175 representatives from practically all of the business and industrial lines of the country, a conference held here last week under the auspices of the Chamber of Commerce of the United States adopted without change the recommendations of five of six committees which were appointed about a year ago to study the problem of distribution. There was much discussion of the report made by Committee No. 6, with the result that the conference eliminated recommendations as to price maintenance and the necessity of amending the Sherman and Clayton anti-trust laws. Among representatives of the iron and steel and related industries attending the conference were R. Shively, Tennessee Coal, Iron & Railroad Co., Birmingham; George T. Fielding, General Electric Co., Bridgeport, Conn.; A. E. McKinstry, vice-president International Harvester Co., Chicago; Frank Parish, United States Steel Corporation, New York; and George D. McIlvaine, secretary-treasurer National Pipe and Supplies Association, Pittsburgh.

While the conference was concerned principally with distribution in wholesale and retail trade, the broad principle itself engaged great interest throughout the business and industrial world because of the bearing it has upon their operations.

One of the outstanding steps taken by the conference was a plan to set up machinery for the purpose of self-government and the tracing and elimination of waste in marketing. The conference recommended as a first step in the elimination of trade abuses and destructive trade practices that the Chamber of Commerce designate a joint trade relation committee to act as a clearing house for complaints. It was also proposed to take further steps in the joint collection of statistics and business figures and the conduct of economic research in the interest of business and the public at large. This committee will be made up of manufacturers, wholesalers, retailers and consumers.

This program was undertaken at the suggestion of Secretary of Commerce Herbert Hoover who said, in a brief address:

We would be grateful if there would come out of this conference some kind of an organization for the promotion and the better coordination of research; that some sort of definite, organized expression and impulse might be given to the building up of the statistical and research activities throughout the country. And I make that general expression because I believe that research, through the business world

itself, and statistics so far as they may be completely collected, are in the hands of better agencies than the Government.

Wastes in marketing as they now exist were laid at the door of the producer and the consumer as well as the distributor. It was the view of the conference that "present methods of distribution have been developed by economic forces and fundamentally are sound." Wasteful practices were declared not to be inherent in the present machinery of distribution, but "arise through human failings, such as lack of definite organized information and the imperfection of performance which characterizes alike producer, manufacturer and distributor."

Among resolutions adopted, other than those indicated, was one recommended by a committee on market analysis, advertising, and advertising mediums, which reported that first hand testimony from a large number of advertisers had been presented, demonstrating that advertising decreases the cost of selling and production, reduces prices to consumers, and raises the standard of living.

The resolution, as adopted by the conference, declared that the only safe basis for advertising and marketing plans is an accurate and adequate knowledge of where and what the market is and the means by which it can be reached most economically and effectively. It was further stated that existing wastes in advertising result in large part from lack of marketing information, from unintelligent direction and from poor correlation of advertising with the sale of the product.

Mr. McIlvaine was a member of Committee No. 4, on "Expenses of Doing Business," which recommended uniform classifications of accounts and studies into the expenses of doing business. A critical survey of manufacturers' distribution costs, according to the committee, discloses that it is impracticable to attempt to arrive at an average figure, because of the difference in methods used. Even the costs of manufacturers engaged in producing the same commodity, it was stated, cannot be compared because it is found that as many as six methods are followed in reaching the ultimate consumer.

In a chart in the committee report on the distribution of the wholesalers' margin, the selling expense for 146 firms distributing pipe and supplies was given as 20 per cent of the margin between the purchase price and sales price; the warehouse expense, approxi-

mately 17 per cent; the general administration expenses, about 40 per cent; other expenses, about 20 per cent; and the net profit, about 3 per cent. The total direct selling expense in these lines in 1924 was 4.12 per cent of the net sales; the warehouse expense, 3.57 per cent; total administrative and general expenses, 8.57 per cent, and other charges, 3.76 per cent. The total common operating expenses were 20.02 per cent of the net sales, the margin, 20.57 per cent, and the profit, 0.55 per cent. The turnover was not given. For 52 machinery equipment firms common operating expenses in wholesale business, in terms of percentage of net sales, were given as follows: Total direct selling, 5.30 per cent; warehouse, 3.15 per cent; administrative and general, 9.97 per cent; other charges, 3.42 per cent. Total expenses were averaged at 21.18 per cent; the margin was 21.69 per cent; profit, 0.56 per cent. The stock was turned over 3.52 times for the year.

The report spoke especially of the unusual selling ratios, which are sometimes approximately 10 times as much in one company as another.

"In studying the results of these companies as a whole," said the committee, "it appears that one generalization may safely be made—that is, the expense ratio is generally less in the largest companies and the

margin is generally higher, or at least as good. The better expense ratio is probably due to the attainment of a large volume of business without a corresponding increase in fixed expense. The better margin may be due partly to the advantage in buying in large quantities."

Individual items of expense, it was pointed out, do not show a uniform tendency contributing to these results, except that administrative and general expense seems to be invariably lower in the largest concerns. A second uniform tendency in all business studied is the turnover of inventory which, it was stated, invariably is best in the largest companies.

The committee, in pointing out difficulties in getting more facts as to manufacturers' distribution costs said that in some instances Government restrictions on interchange of information between manufacturers made them reluctant to disclose details of their costs. Because of this and the absence of any uniform system of expense classification, it was declared, the slender collection of percentages cannot be considered as representative or used for comparative purposes. The committee said there is need for a better understanding as to the end of the manufacturing process and the beginning of the distribution process, in order that the costs of one shall not be confused with the costs of the other.

Rates on Wire Rods Not Limited to Steel of Round Cross Section

WASHINGTON, Dec. 22.—Steel manufacturers have succeeded in defeating a proposal of railroads in Official Classification territory to change the description on bolt, nail, rivet and wire rods, in coils, so as to restrict the application of the so-called billet basis of rates on carload shipments to rods round in cross section.

The decision by the Interstate Commerce Commission in this important case, made public on Wednesday of last week, held that a limitation of the billet basis to rods round in cross section is not justified. It ordered the suspended schedules cancelled. The change in classification was strongly opposed at the hearings by the Jones & Laughlin Steel Corporation, Pittsburgh, the Sharon Steel Hoop Co., Sharon, Pa., the Youngstown Sheet & Tube Co., Youngstown, the American Steel & Wire Co., Cleveland, and the Pittsburgh Steel Co., Pittsburgh.

The effect of the proposed description would have been an increase in rates on all rods in coils which are not round in cross section. The Interstate Commerce Commission in arriving at its decision adhered to previous opinions, notably one handed down in connection with a complaint of the Lancaster Steel Products Corporation against the Director-General of Railroads. In that case the commission held that the material in question was properly classed as "wire rods" and was so known to the steel trade generally, notwithstanding the fact that some of it was rectangular and some hexagonal and that part of it was ultimately manufactured into articles other than ordinary commercial wire.

The upshot was that the commission held that commodity rates were applicable. In the present case, which took on a still broader aspect, the commission pointed out that it had often held that in interpreting the tariff the terms must be taken in the sense in which they are generally understood and accepted commercially.

The decision of the commission goes into a technical description of the manufacture of various forms of steel, including billets and wire rods, and states that steel rods are used for the manufacture of wire, bolts, nails, rivets, and other commodities.

The production of steel rods was estimated at about 4,000,000 tons per year, of which the shapes, other than round, comprise about 10 per cent. It was pointed out that a steel rod which can be used in the manufacture of wire and which, in that sense, is a wire rod, can also be used in the manufacture of other commodities such as bolts and then is commonly referred to as a bolt

rod. It was further noted that the wire is drawn from flat and hexagonal rods as well as from round.

While finding that the schedules under supervision as they restricted the application of the billet basis to bolt, nail, rivet, or wire rods and chain, iron or steel, when round in cross section were not justified, the commission vacated schedules on wire and chain steel which contain no limitation on shapes.

Coke Rates from Chattanooga to Pacific Coast Declared too High

WASHINGTON, Dec. 22.—Rates on coke in carloads from Chickamauga and Durham, Ga., and Chattanooga, and Alton Park, Tenn., to the Pacific Coast are not unreasonable or unjustly discriminatory, but are unduly prejudicial to the extent that they exceed the rate from points in the Birmingham district to the same destinations, according to a decision announced last Friday by the Interstate Commerce Commission. The rate from the Birmingham district and Chicago to San Francisco is 60c. per 100 lb., as against 68c. from Chattanooga, Durham and Chickamauga to the same destination. Of shipments from the Chattanooga district to Texas and Pacific Coast points since 1919, the movement of foundry coke is estimated at 5000 to 6000 tons a year since 1919.

The transcontinental carriers participating in the movement, according to their witnesses, published the rate of 60c. from the Birmingham district upon representations that it would move some of the low-grade coke from that territory and would permit the shippers there to compete with the coke imported from foreign countries and with coke moving from the Atlantic seaboard and Gulf ports by water. The report says that a substantial amount of coke has been imported through Pacific ports during the past few years and to some extent foreign coke has driven domestic coke off the Pacific Coast. It was shown that during 1922, 1923 and 1924, receipts of foreign coke at San Francisco by water amounted to 63,368 tons, while 113,501 tons of coke were received at Pacific Coast points by rail over the Southern Pacific during the period from 1921 to Sept. 30, 1924.

An existing washer will be remodeled into one of the Brassert type and gas burners at the hot blast stoves of the Sharpsville Furnace Co., Sharpsville, Pa., will be installed by the Freyn Engineering Co., Chicago.

NOVEMBER SHEET SALES

Not So Large as in October but Good Showing Against November, 1924

The independent sheet manufacturers did better in October than they did last month in all three of the barometric factors: sales, production and shipments. Sales decreased 33,130 tons in November, as compared with the month before, production was 12,693 tons lower and shipments 37,551 tons, according to the monthly report of the National Association of Sheet and Tin Plate Manufacturers. November sales, however, were 75,701 tons in excess of shipments and unfilled orders increased 40,987 tons, the difference being largely accounted for by the fact that the orders completed and awaiting shipment at the end of November were 23,883 tons greater than at the end of October.

While the November showing is not favorable in comparison with October, it does make a favorable comparison with November, 1924, except in sales, and in that month the sales reached 462,709 tons, which is the greatest tonnage ever booked in one month by the manufacturers reporting to the association. Production for last month was 101,090 tons greater than in the same month last year and shipments show a gain of 75,432 tons, while the unfilled orders as of Nov. 30, last, were 104,725 tons in excess of those of the corresponding date last year.

The statement, with comparisons, follows:

	1925		1924	
	November	October	September	November
No. of mills.....	714	709	708	686
Capacity per month, tons	416,000	437,000	426,300	384,000
Per cent reporting.....	74.9	74.8	74.9	73.5
Sales, tons.....	370,361	403,491	286,029	462,709
Production, tons.....	336,021	348,714	295,810	224,931
Shipments, tons.....	294,660	332,211	262,050	219,228
Unfilled orders, tons.....	636,570	595,583	497,698	531,845
Unshipped stocks, tons.....	107,177	83,244	84,211	76,811
Unsold stocks, tons.....	36,105	40,200	36,587	41,573
<i>Percentages of Capacity</i>				
Sales.....	122.8	127.3	89.6	164.0
Production.....	107.8	106.4	92.7	79.7
Shipments.....	97.7	104.8	82.1	77.7
Unfilled.....	211.1	187.9	161.3	188.5
Unshipped.....	34.4	25.4	26.4	27.2
Unsold.....	11.6	12.3	11.5	14.7

Production of Steel Barrels Falls Off

Department of Commerce reports from 31 establishments operating 36 plants show 498,929 steel barrels manufactured in November, compared with 553,545 barrels in October. Shipments in each month were almost identical with production. The current figure compared with 391,401 barrels in November of last year. It represents, according to figures of the Steel Barrel Manufacturers' Institute, Cleveland, about 44.9 per cent of capacity. Production of I. C. C. barrels was reported at 59.3 per cent of capacity, while light barrels were placed at 48.5 per cent.

Unfilled orders rose rapidly in November, to 1,248,545 barrels, of which 251,567 barrels were for delivery within 30 days. The increase in orders was wholly within the longer term delivery, as the unfilled orders at end of October, amounting to 890,904 barrels, called for 356,626 within 30 days. Current unfilled orders are very close to those of one year ago.

French Steel Industry Stimulated—The 1925 Production

Due to the broadening of foreign purchases in order to take advantage of the depreciation of the franc and also because of the pyramiding of domestic orders placed partially for stock, the production of iron and steel in France has risen to new levels, Commercial Attaché Chester Lloyd Jones, Paris, cables the Department of Commerce. During October 739,000 metric tons of pig iron and 668,000 tons of steel ingots and castings were turned out, against 717,000 tons and 632,000 tons, respectively, for the preceding month. No increase in the number of furnaces in operation occurred in November.

Prices for foreign sales are rising, but the ratio

of increase in quotations is less than the rate of decrease for the franc. The domestic prices on semi-finished steel and finished products are stiffening and quotations for January deliveries are considerably higher in anticipation of higher taxes and wages and of increased material and transportation costs. Further increases are probable.

Estimating the output for November and December, the total production for 1925 approximates 8,500,000 tons of pig iron and 7,650,000 tons of steel ingots and castings, which is a considerable advance over the 1924 output of 7,657,000 tons of pig iron and 6,907,000 tons of steel ingots and castings.

Automobiles in November

WASHINGTON, Dec. 19.—Production of motor vehicles in November, according to the Department of Commerce, totaled 336,358 passenger cars and 39,893 trucks, of which 327,617 passenger cars and 37,704 trucks were made in the United States, the remainder being American models made in Canada. The November output showed a decline as compared with that of October, when production of passenger cars totaled 406,572, while production of trucks was 45,914.

It was, however, by far the largest November output in the history of the industry, comparing with 204,343 cars and 27,905 trucks last year, with 284,921 cars and 28,066 trucks in 1923 (the previous record year) and with 215,352 cars and 21,949 trucks in 1922 (also a record year).

Trucks produced in eleven months have aggregated 462,589, which is 85,000 more than in last year's record-breaking 12-month total. If December equals November the year's truck total will pass 500,000.

British Steel Exports and Imports Lower

WASHINGTON, Dec. 22.—Exports of iron and steel from Great Britain amounted to 322,188 gross tons during November, a loss of 13 per cent from the October figures, says a cable to the Department of Commerce from Acting Commercial Attaché Mowatt M. Mitchell, London. The more pronounced declines were in shipments of galvanized sheets, tin plate, rails and railroad material, structural shapes, tubular products and steel bars. A considerable increase was noted for foreign consignments of pig iron and ferroalloys. A recession took place in the import trade also. Receipts of foreign-made iron and steel into Great Britain dropped from 218,250 tons in October to 212,154 tons in November. Semi-finished iron and steel, plates and sheets, sustained heavy losses; on the other hand greater quantities of pig iron and ferroalloys, steel bars, steel rods and steel angles entered the country.

Wants \$2,000,000 a Year for Pure Scientific Research

WASHINGTON, Dec. 22.—The National Academy of Sciences has made an appeal to a body of prominent men to join with the leading scientists of the country in an endeavor to secure larger resources for research for pure science. The academy hopes that an annual income of at least \$2,000,000 can be obtained to establish national research professorships and in other ways to cooperate with universities and other institutions which are declared to be prepared to do their full share to support fundamental research in the mathematical, physical and biological sciences. The academy statement said that while the United States is leading all nations in industrial research it is falling far behind in pure scientific research, and thus is failing to produce the new knowledge upon which advances in applied sciences must rest.

The Standard Steel & Iron Co. has started operating one of its mills at the plant of the Aetna Nut Co., Southington, Conn. The second mill will be started shortly. The company has spent considerable money in repairs and conditioning machinery.

Refractories for the Open-Hearth

Causes of the Failure of Some Magnesite Brick— Various Tests Carried Out—Tentative Specifications Proposed

BY L. S. LONGENECKER

WHILE I was serving in the capacity of refractory engineer for a large steel plant, a peculiar yet not unusual type of premature magnesite brick failure was forcibly brought to issue and investigated. In one particular case the back wall and body corners of a large open-hearth furnace had been built up complete with a brand of commonly used magnesite brick of good reputation. For test convenience let this brand of brick be known as Brand A.

The method of installation used, as to furnace design and procedure of laying up the brick, was the same as is always employed. The furnace was lighted and burned-in according to common practice. On the sixth day following the lighting-up date, the body corners and back wall developed a very serious type of failure. The whole inside section of magnesite brick, about $4\frac{1}{2}$ in. thick, failed by a shearing off and sagging down process to such an extent that in certain places parts of the structure slid or fell completely into the furnace. An interesting fact is that apparently on many previous similar installations this brand of material proved quite satisfactory.

This outstanding and unusual type of failure was deemed worthy of a complete and minute investigation. After carefully examining and discussing the failure with several practical mill men, the conclusion was unanimous that the failure was a direct result of poor and improperly made bricks. If it were a case of poor brickmason workmanship, there would be every reason to expect the whole thickness of wall to fail, and not just a thin uniform inside section, as was the case. If it were a result of improper (too rapid) "burning in" of the furnace, we would then very likely find such a type of failure as severe surface fusing and running of the brick ends, which was absent. It is quite certain that neither of these agencies caused the trouble. It then reflects back to the one remaining item—the bricks themselves.

In order to diagnose this brick failure, a complete set of laboratory tests was planned and made. The tests included the following items, the results of which should show the immediate cause of the trouble:

- 1—Modulus of rupture
- 2—Load test
- 3—Chemical analysis
- 4—Apparent porosity
- 5—Apparent specific gravity
- 6—True specific gravity

In order to make this investigation more complete, samples of two other brands of well-known magnesite bricks were also included and tested. Again, for testing convenience, let one of these brands be known as Brand B and the other as Brand C. Through the additional test data, as secured from the two other

brands, it should be possible to determine partially what characteristics a magnesite brick must possess, regardless of brand, in order to be of most service in actual steel mill practice.

Before entering into a discussion of the test it may be well to caution that, complete as these tests may seem, it would be most unwise to draw any hard and fast conclusions from them. The spirit of presenting this matter is to show a possible starting basis and interesting trend along the lines of which some further valuable laboratory and practical mill research work could well be developed.

All tests as made were carefully planned, supervised and observed throughout by the writer. The procedure, results, etc., were recorded in complete detail. In many cases the outstanding and peculiar behavior of a specimen while under test told a more valuable story than the actual final test results themselves. Every effort was made to record anything unusual and to work it toward some final conclusion.

Modulus of Rupture Test

The first test made was the modulus of rupture test. The bricks in this test were placed with the smallest dimension or thickness in the vertical plane. Two knife edges 7 in. apart served as the supporting bases. The load was applied from the top through a third knife edge in a plane midway between the supports and ends of the specimens. The load was applied from zero to the breaking point in uniformly increasing values by means of a motor and specially geared screw. The load was read directly from the scale beam. Four (4) tests were made on each brand of brick. The modulus of rupture was computed by using the equation:

$$M = \frac{3 PL}{2 bd^2}$$

P = Breaking load in pounds
L = Distance between supports in inches
b = Width in inches
d = Thick in inches

It so happens that, as shown by Table I, in each brand three tests check fairly well while the fourth runs up into very high values. Carefully examining the test pieces, it was found that the low values were secured on bricks which the brickmasons refer to as soft, and the high values on those known as hard bricks. The cross-sectional areas of the soft bricks are considerably greater than the cross-sectional areas of the hard bricks. Being made probably in the same mold, the bricks which are larger than others of the same brand, have evidently been burned softer and shrunk less.

The three brick manufacturing items that quite

ARTICLES on the practical phase of the refractory problem are rare. The author of this article was recently the refractory engineer for one of the largest steel companies in this country. He describes the failure in an open-hearth furnace of a shipment of magnesite brick and the tests planned and carried out to determine the cause. Based on the results, he proposes tentative specifications for such brick. The article discusses a problem which is of vital interest to steel makers.

Table I—Modulus of Rupture Test Data

Brand	Mark	Test	Size, In.	Thickness	Width	Area, Sq. In.	Breaking Load, Lb.	Mod. of Rupture	Average Mod. Rupture
A	1	2	2 1/2	4 3/8	11.50	2,280	794		
A	2	2	2 1/2	4 3/8	11.08	1,280	484		651 Soft
A	3	2	2 1/2	4 3/8	11.08	1,785	676		
A	4	2	2 1/2	4 3/8	10.48	3,910	1,568		1,568 Hard
B	1	2	2 1/2	4 3/8	11.08	4,120	1,560		
B	2	2	2 1/2	4 3/8	10.54	3,285	1,378		1,205 Soft
B	3	2	2 1/2	4 3/8	10.67	1,680	678		
B	4	2	2 1/2	4 3/8	10.31	7,660	3,120		3,120 Hard
C	1	2	2 1/2	4 3/8	11.89	3,410	1,147		
C	2	2	2 1/2	4 3/8	11.81	2,270	1,107		
C	3	2	2 1/2	4 3/8	11.53	3,310	1,176		1,143 Soft
C	4	2	2 1/2	4 3/8	10.06	10,310	4,420		4,420 Hard

likely have the most effect on varying the modulus of rupture are, first, the material itself; second, the workmanship entering into the making of the brick, and, third, the kiln burning temperature and practice. Fully realizing this to be the case, an effort was made to continue the tests along such lines that the final results would definitely point out the trouble-making item or items.

Load Tests

In the load test the bricks are placed on end and a load of 50 lb. per sq. in. applied on the top end. The test is set up and run in a specially arranged furnace. The load is held constant and the temperature gradually brought up at a given rate until the test piece fails. Thus tested, it is possible to gain some idea of the strength of the different bricks at high temperatures. It is interesting to note how these results correspond with the modulus of rupture results. The tests are compiled in Table II.

The first four load tests show how the different brands compare. The one with the greatest cross-sectional area, which indicates that it is the softest of the four, has the smallest elapsed time. A comparative test was run on two Brand B bricks, the one a hard brick and the other a soft one. Here the hard brick gave the best demonstration of strength at high temperature. The hard brick in this case was considerably weakened by a half dozen large lumps which had been molded into the brick and showed up clearly in the plane of fracture. The plane of fracture here was so very different from the usual type of fracture that it was apparent that the failure had been directly influenced by the ununiform grind of the material. The C-2 and C-4 samples were half bricks as taken from the modulus of rupture test samples. Here the hard brick sample gave such a much better record in temperature and elapsed time that it is now safe to say the hard bricks also are considerably stronger than soft bricks at high temperatures. This being true, it becomes even more important to definitely determine what item of manufacturing practice causes soft bricks, and actual furnace failure and trouble.

Again referring to the modulus of rupture table, Brand A No. 1, 2 and 3 samples are from the same batch of brick as those which failed in the previously mentioned furnace installation, which prompted this test. It will be noted that the modulus of rupture values for these samples are very low; also, that all test samples of large cross-sectional areas have considerably lower modulus of rupture values than those of smaller cross-sectional areas. Referring back to the load test again, it is to be noted how well the strength at cold temperatures ties in with the strength

at high temperatures. That is, brick with large cross-sectional areas, also give poorer strength tests at high temperatures. This then will indicate that the modulus of rupture is a good, practical index by which to determine a satisfactory or unsatisfactory service brick, in so far as its strength is of importance. It is now fairly certain that the lower the modulus of rupture, the softer the brick, and consequently, when this value falls too low, actual premature furnace failure is the result.

Other Tests

After it was quite definitely determined that soft bricks, those having the larger cross-sectional area, give poorer service records than hard bricks, an attempt was made to determine the cause producing them. It is quite probable that this is to be found in one of the three following items:

- (1) The workmanship and mechanical element entering the actual making practice;
- (2) The brick material itself, as regards chemical analysis;
- (3) The burning temperature and kiln practice.

As regards workmanship, an effort was made to learn the general scheme of making magnesite bricks, and thus check whether or not there were any possible operations here causing the trouble. In a personal interview with a man who is closely associated with the actual making of magnesite bricks, the process was gone over and discussed in complete detail. It was found that no item of workmanship or any mechanical element was responsible for differences of the magnitude found.

To trace down systematically the other two possible sources of trouble, the test pieces for further testing were taken from the modulus of rupture samples and labeled according to the following table:

Brand	Condition	Mod. of Rupture	
		Test Chosen	Mark Given
C	Soft	No. 2	C-2
C	Hard	No. 4	C-4
B	Soft	No. 1	B-1
B	Hard	No. 4	B-4
A	Soft	No. 3	A-3
A	Hard	No. 4	A-4

Thus marked, it is possible at any time to compare the following tests with the original modulus of rupture test which gave rise to the soft and hard brick issue. All six of these test pieces were treated in the following procedure as separate test pieces.

The second item, which may cause soft brick, is the material itself as regards chemical analysis. Table III gives in tabulated form the chemical analysis of each test piece.

Table II—Load Tests on the Three Brands of Bricks

Brand	Approx. Length, In.	Size, Inches		Area, Sq. In.	Load Per Sq. In.	Time Gas On	Yielding		Failed		Elapsed Time, Hr.
		Thick.	Width				Time	Temp. ° F.	Time	Temp. ° F.	
A	9	2 1/2	4 3/8	10.94	50	10.00	3.00	2,408	3.50	2,550	5.8*
B	9	2 1/2	4 3/8	11.21	50	10.00	4.00	2,550	4.05	2,590	6.08
C	9	2 1/2	4 1/2	11.81	50	9.45	2.30	2,408	2.53	2,590	5.2
Brand B											
Soft	9 1/2	2 1/2	4 3/8	11.10	50	10.00	{ Failed with- }		2.07	2,516	4.1
Hard	8 1/2	2 1/2	4 3/8	9.95	50	10.00	{ out Yield }		2.20	2,550	4.3†
Special Test											
C-2	4 1/2	2 5/8	4 1/2	11.81	50	9.30	2.00	2,408	2.10	2,550	4.7
C-4	4 1/2	2 1/2	4 1/2	10.06	50	9.30	3.30	2,624	3.45	2,625	6.3

Note: C-2 and C-4 were made on half brick as secured from modulus of rupture test. All other tests made on regular 9-in. bricks.

*Area indicates probably not one of weakest Brand A.

†Failure caused by lumps, six in number; no uniform mix and grind of material.

Table III—Chemical Analysis of the Brick Test Pieces

Mark Brand	Magnesia, Per Cent	Iron Oxide, Per Cent	Lime, Per Cent	Silica, Per Cent	Alumina, Per Cent	Total, Per Cent	Mod. of Rupture
C-2	85.30	4.53	3.45	4.48	2.63	100.39	1,107
C-4	83.81	4.56	4.14	4.76	3.52	100.79	4,420
B-1	81.88	4.89	4.51	6.20	2.99	100.47	1,560
B-4	81.89	3.97	4.69	7.12	2.71	100.38	3,120
A-3	84.37	5.98	4.29	2.86	3.14	100.64	676
A-4	84.66	6.71	4.66	2.48	2.45	100.96	1,528

Carefully examining these data it will be noted that the hard and soft brick samples, as determined by the modulus of rupture tests, do in no way tie-in with the chemical analysis. That is, the greatest change in modulus of rupture values appears in the brands themselves and not between bricks of different brand, while the chemical analysis varies very little in the brands themselves. Such being the case, it is safe to dismiss this second item as not being the cause of the soft bricks under discussion.

This leads to the third item which concerns the "burning temperature and kiln practice." The "reduction in volume" behavior of the soft samples on the re-burn tests shows that we have here the crux to the situation. In order to definitely determine the amount of underburn of each sample, two re-burns were made and the corresponding values recorded. The re-burn data are tabulated in Table IV.

Carefully noting the results as shown in Table IV, the first item of interest is the apparent specific gravity as made on the original samples. The apparent specific gravity of each sample varies a very small amount, which indicates the raw material used in each brand has been calcined in much the same manner and amount. Therefore, no cause for the trouble can be placed here.

The first re-burn at 1400 deg. C. shows the two Brand A samples to be the only ones to show any appreciable volume change. This means that these bricks alone have been burned at a kiln temperature somewhere below 1400 deg. C. This most certainly is too soft a burn, as has been clearly demonstrated by their failure in the previously noted Talbot back wall case.

The next re-burn at cone No. 20 (approximately 1530 deg. C.) shows all the soft brick to have changed volume 5 per cent, or better, while the hard brick have only varied somewhere around 2 per cent. The indication here would be that this re-burn temperature is slightly higher than the kiln temperature at which any of the samples were originally burned, even slightly above that of the hard burned samples.

These re-burn temperatures should be taken only as approximate, and as such, not considered too literally. The general point to be made here is that too soft burned brick, as the Brand A samples for instance, will cause actual furnace failures and naturally a corresponding reduction in service life. It is to be appreciated that it would be difficult, if not impossible, to secure all hard burned bricks from the kiln to conform with the hard burned samples. This is not necessary, as we have found the softer burned brick to be satisfactory also, provided they were not too soft, as can readily be determined by a modulus of rupture test.

Conclusions from the Tests

The failure of Brand A back wall and corners has been directly a result of too soft burned magnesite

brick. By test it has clearly been shown that a hard burned brick (within limits) is best capable of giving the most satisfactory life. The kiln burning temperature and practice have definitely been determined as the one manufacturing item producing these soft or hard burned bricks. The modulus of rupture test has been demonstrated as being the best practical index by which the consumer can gage the burn of a magnesite brick. A brick with a modulus of rupture below 1200 lb. per sq. in., with the present chemical analysis, can be considered a dangerously soft brick. The tests also show that a brick is greatly weakened by the use of a lumpy, non-uniformly ground mix.

It is to be appreciated that the modulus of rupture can be boosted considerably at lower kiln burning temperatures by the addition of a greater amount of proper fluxes. The decrease in fusing point of such a material, however, would probably cause rather serious trouble and should not be employed until well proved by satisfactory tests.

Suggested Tentative Specification

In view of the valuable disclosures as made by the very satisfactory and definite test data contained in this article, it may logically follow that a tentative buying specification for magnesite brick can properly be drawn up. This list of specifications is based on all available research data, actual mill tests, etc. They have been discussed in full detail with several well-known authorities on the manufacture of magnesite brick. They heartily indorse the buying specification idea and approve these as a good starting point. These specifications are now being used by a large steel mill as a buying guide with marked success. The buying specifications are as follows:

1. *Modulus of Rupture.*—Eight bricks out of every 10 tested shall have a modulus of rupture value above 1200 lb. per sq. in., and the remaining two bricks shall not have a modulus of rupture value below 1000 lb. per sq. in. Any exceptionally low modulus of rupture value, which cannot be considered as a result of the kiln burn, will be ignored in this test and considered accordingly.

2. *Chemical Analysis.*—This shall be limited as follows: The magnesia content shall be above 82 per cent, the lime content shall be below 5 per cent, the silica content shall be below 7 per cent, the iron oxide content shall be below 8 per cent, the alumina content shall be below 3 per cent, and the combined percentage of alumina and iron oxide shall not exceed 9 per cent.

3. *Apparent Specific Gravity.*—This shall be above 3.50.

4. Physical Condition:

(a) All bricks shall be made from well ground material and free from any miscellaneous lumps that will not pass through a 4-mesh sieve.

Table IV—Values Obtained on Re-Burning the Samples

Mark Brand	Original As Received				Reburned at 1400 ° C. 2552 ° F. for 5 Hr.				Reburned at Cone 20 (2700 ° F.)			
	Porosity, Per Cent	Bulk, Sp. Gr.	Apparent, Sp. Gr.	Vol.	Porosity, Per Cent	Bulk, Sp. Gr.	Vol.	Vol. Ch'g., Per Cent	Porosity, Per Cent	Bulk, Sp. Gr.	Vol.	Vol. Ch'g., Per Cent
C-2†	25.49	2.65	3.56	34.0	23.9	2.66	33.7	0.7	14.07	2.91	31.18	11.1
C-4	15.01	3.00	3.52	19.8	12.7	3.02	19.7	0.7	14.05	3.01	19.45	2.0
B-1	26.70	2.63	3.53	18.2	24.0	2.63	18.1	0.7	21.1	2.77	17.02	6.5
B-4	19.03	2.82	3.49	18.2	17.7	2.83	18.2	None	18.50	2.85	17.76	2.7
A-3	32.47	2.39	3.55	27.9	30.1	2.44	27.36	1.8	29.8	2.51	26.48	5.0
A-4	28.17	2.55	3.54	24.4	26.0	2.59	23.90	1.7	27.0	2.59	23.92	2.0

*On this burn, cone No. 16 was put down.

†C-2, cone touched in re-burn of cone No. 20, and test should therefore be rejected when considering final results.

- (b) All corners, edges and face surfaces shall be of sharp outline, well made and in good condition.
- (c) Under hammer test all bricks shall produce a good clear ring.

A Check on the Specifications

Sometime following the developing of this set of specifications a second shipment of Brand A magnesite brick was received and placed in a similar service installation as previously mentioned. Six sample brick were taken out of this carload lot and given the modulus of rupture test in order to determine their degree of kiln burn. The resulting data are given in Table V.

The modulus of rupture specification demands that eight out of every 10 brick tested shall produce a modulus of rupture value above 1200 lb. per sq. in., and the remaining two bricks shall not have a modulus of rupture value below 1000 lb. per sq. in. Also, any exceptionally low modulus of rupture value which cannot be considered as a result of the kiln burn will be ignored in this test and considered accordingly.

It is to be noted that the test of this carload of Brand A magnesite brick easily meets this modulus of rupture specification, and indicates that they may have

been burned hard enough to warrant satisfactory furnace service, in so far as the kiln burning item is concerned.

The service behavior of this installation, after running its normal life, clearly shows it as proving satis-

Test Sample	Thickness Width		Area Sq. In.	Breaking Load, Lb.	Modulus of Rupture, Lb. per Sq. In.
	Inches	Inches			
1	2.52	4.25	10.71	3,940	1,530
2	2.50	4.40	11.00	3,180	1,220
3	2.45	4.35	10.66	1,830	745*
4	2.42	4.32	10.46	3,700	1,540
5	2.50	4.30	10.75	4,270	1,665
6	2.56	4.35	11.09	4,160	1,545

*Note—Low modulus of rupture value due to several fire and surface cracks.

factory. This then is a recent demonstration of how the buying specifications for magnesite brick well serves its intended use. These specifications are necessarily tentative and subject to revision, as it is well recognized that the relative importance of some of the factors may have been misjudged and over- or underrated.

Operating Experience with Steel Turnings Crusher

Large returns on the investment are claimed for the steel turnings crushing machine here illustrated. It prepares for sale the scrap from 22 boring mills and some 20 lathes at the Gier pressed steel plant of the Motor Wheel Corporation, Lansing, Mich.

Formerly the turnings and borings were carted to a dump at a cost of \$4 a load, or \$2.67 a ton, the scrap from the machine tools now being hauled by wheelbarrows to the crusher by the same crew of men. The wheelbarrow loads of long turnings are dumped into the hopper of the machine, crushed to shoveling turning size, 1½ in. long, and then delivered through a chute to the scrap pile from which they are picked up when sold. The short scrap thus produced is disposed of at a net price of \$9 per ton.

The machine, built by the American Pulverizer Co., St. Louis, was installed in March, 1924. The construc-

tion of a similar machine built by the same company was described at length in THE IRON AGE of July 19, 1923, page 152. It is operated by one man. An average of 10 tons of turnings is put through the crusher each day. A new lining and new spiders and rings are put in every six months and a new shaft for holding the shredders every three months. Bearings require rebabbing about once a year. Repair parts are furnished by the builder from stock.

According to A. G. Segar, maintenance engineer of the Gier plant, "the steel turnings are crushed at a cost of \$2.53 per ton, which figure includes depreciation, interest, allowance for maintenance and repairs, power and the labor of the man operating the machine. By enabling us to sell the turnings at \$9 per ton and to save the former cost of \$2.67 per ton of hauling the material to the dump, the crusher makes a gross profit of \$11.67 per ton of turnings. After deducting the cost of crushing, there remains a net profit of \$9.14 per ton, which in a year amounts to \$25,592. This is a return of 426.5 per cent on the investment."



Wheelbarrow Loads of Long Turnings Are Dumped into the Hopper and Crushed to Shoveling Turning Scrap. The short scrap is then disposed of advantageously

American Blooming Mill Practice

Study of Metal Displacement, Power Absorption and Bloom Elongation—Engine and Motor Drive

BY W. H. BAILEY*

PRESENTING a series of charts illustrating in graphic and tabulated form a number of examples of blooming mill practice, there will be shown the number of passes taken to reduce various-sized ingots to blooms or billets, as the case may be, the approximate section of the ingot and the blooms after each pass, the cubic inches of metal displaced per pass, the cubic inches of metal displaced per section during the rolling period and, in a number of instances, the foot-pounds of work required for rolling, the steam consumption, where the ingot shown was rolled in an engine-driven mill, or the kwhr. input for motor-driven mills.

While compiling and plotting this information it was observed there was considerable variance in rolling practices. Instances of this nature will be pointed out.

* Chief engineer Illinois Steel Co., Chicago. This is the concluding portion of a paper read at the May 22 meeting of the American Iron and Steel Institute, New York.

To avoid long and tiring descriptions, one of the simpler charts, which has been prepared for the purpose, will be analyzed, and after that comment will be made only on the outstanding features of the other charts.

Fig. 1 shows information compiled from data collected from a test while rolling an 18 x 19½-in. ingot on a three-high engine-driven blooming mill. The engine was a tandem compound with 34- and 60-in. cylinders and 66-in. stroke.

Curve A gives the foot-pounds of work accumulating from pass to pass. This represents all work during the rolling period, including the time the bloom was in the rolls and also during the intervals between passes. It includes also all friction losses. Curve B is similar, except that it represents friction losses only. Curve C shows the time in seconds that the piece was engaged in the rolls and the intervals between the passes. Curve D shows in accumulative form the steam consumed by

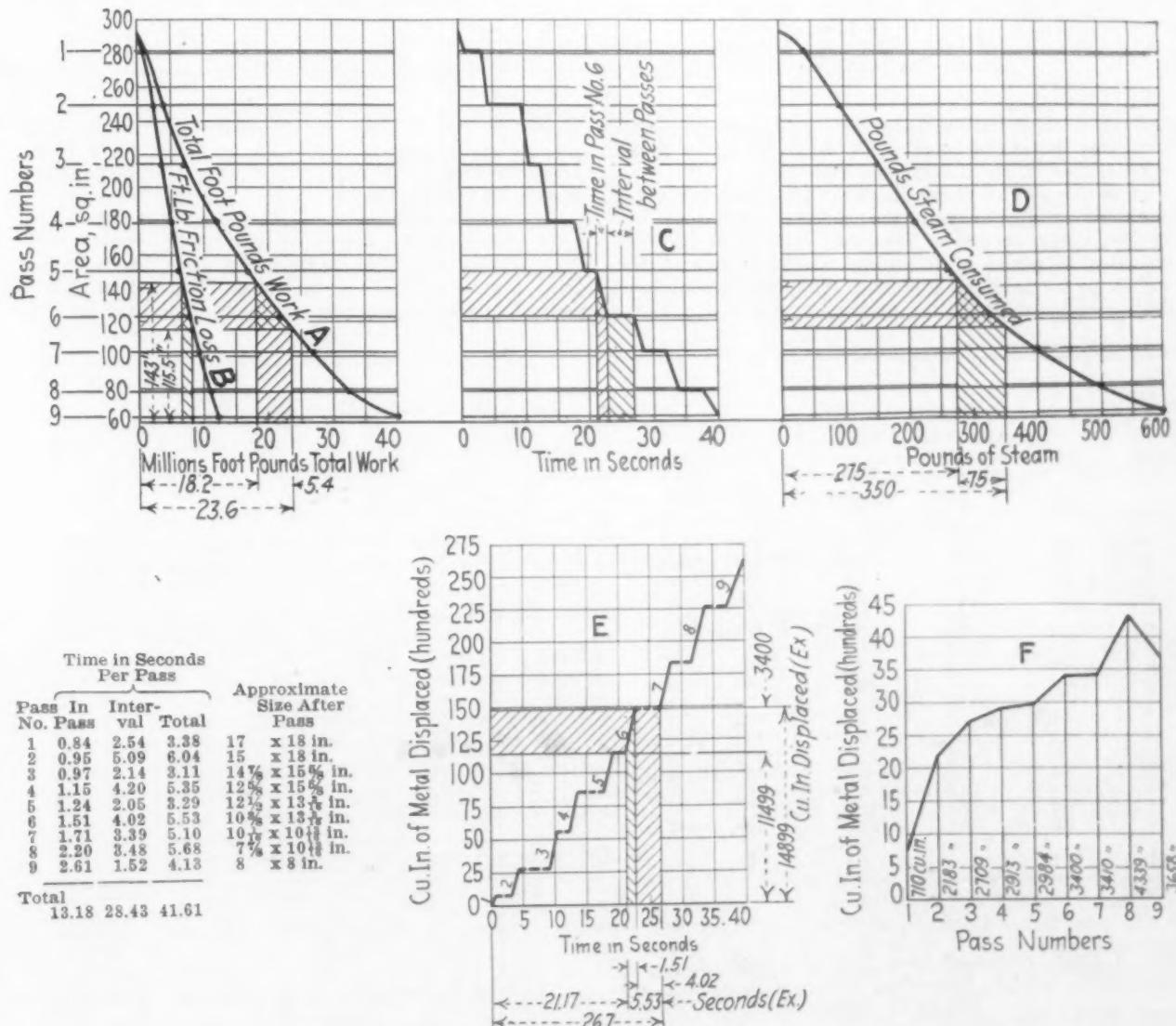
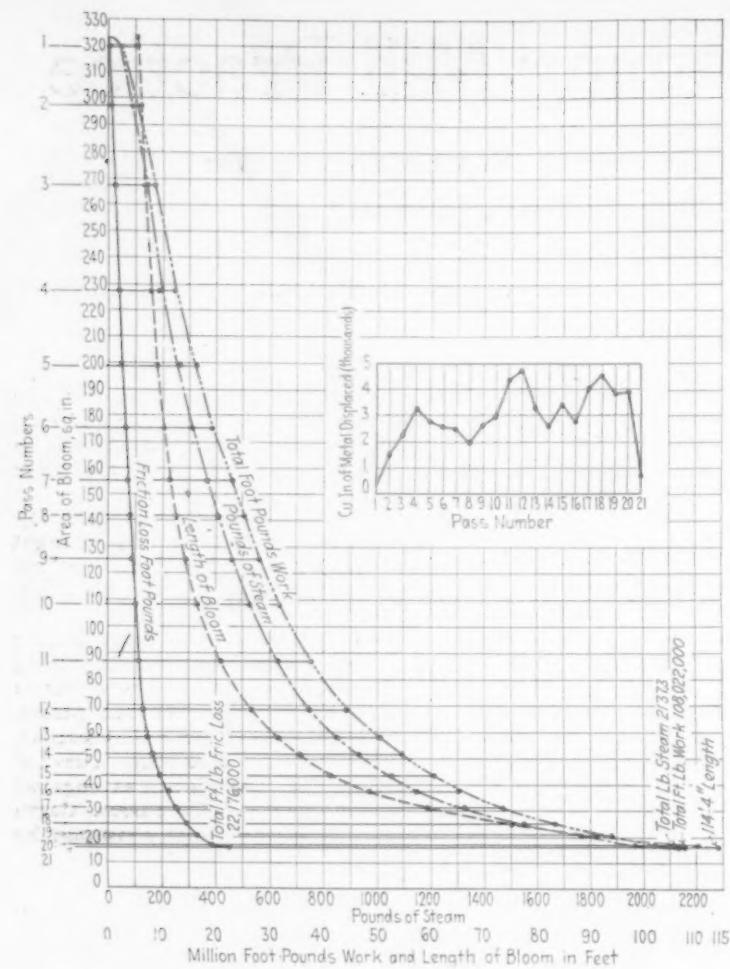


Fig. 1—Data from Rolling an 18 x 19½-In. Ingot to a 4 x 4-In. Billet on a 3-High Engine-Driven Blooming Mill, Using Nine Passes



Pass No.	Time in Seconds			Approximate Size After Pass
	In Pass	Interval	Total	
1	2.1	3.4	5.5	18 1/2 x 17 1/4 in.
2	4.5	3.2	7.7	17 x 17 1/2 in.
3	3.9	3.3	7.2	15 1/2 x 17 1/4 in.
4	4.1	4.7	8.8	13 x 17 1/2 in.
5	3.5	2.8	6.3	15 x 13 1/4 in.
6	3.4	3.1	6.5	13 x 13 1/2 in.
7	2.6	2.9	5.5	11 3/4 x 13 1/4 in.
8	1.9	2.4	4.3	10 1/2 x 13 1/2 in.
9	2.5	2.7	5.2	9 1/4 x 13 1/2 in.
10	3.0	4.5	7.5	8 x 13 1/2 in.
11	5.0	3.0	8.0	10 1/2 x 8 1/4 in.
12	5.1	3.0	8.1	8 x 8 1/2 in.
13	4.7	2.5	7.2	7 x 8 1/4 in.
14	4.5	2.9	7.4	6 x 8 1/2 in.
15	6.8	6.7	13.5	7 x 6 1/4
16	5.7	8.1	13.8	6 x 6 1/4
17	6.5	7.9	14.4	5 x 6 1/4 in.
18	8.0	5.1	13.1	3 7/8 x 6 1/4 in.
19	10.2	9.8	20.0	5 x 4 in.
20	12.0	4.9	16.9	3 7/8 x 4 1/4 in.
21	12.1	...	12.1	4 x 4 in.
Total	112.1	86.9	199.0	

Fig. 2—Data Obtained by Rolling, on a 35-In. 2-High Reversing Blooming Mill, an Ingot Weighing 5488 Lb., into a 4 x 4-In. Billet, Using 21 Passes

the engine from pass to pass. Curve E shows the cubic inches of metal displaced per second and curve F the cubic inches of metal displaced each pass.

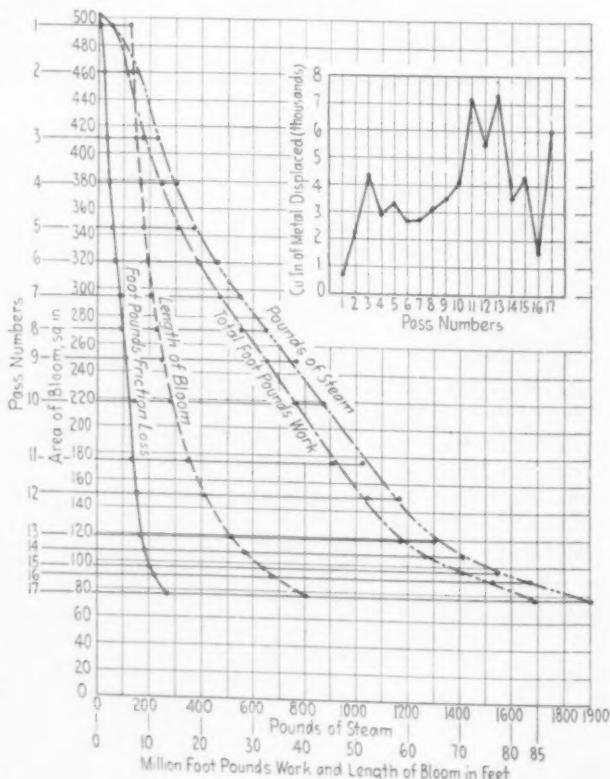
One purpose of these charts is to enable the plant engineer to approximate the power required to roll various bloom sections. The cross-hatched areas were provided to assist in following an application of the curves to an assumed problem. Suppose the engineer desires to know the power required to roll a 13 x 11-in.

bloom to 10 1/2 x 11-in. in one pass. The 13 x 11-in. section has an area of 143 sq. in. and the 10 1/2 x 11-in. bloom an area of 115 1/2 sq. in., representing a reduction in area of 27.5 sq. in.

He begins with curve A, reading vertically in the area column to the horizontal line corresponding with area 143 sq. in. Then horizontally from there to the total foot-pounds of work curve. From that intersection, vertically down to the horizontal base line he

Pass No.	Time in Seconds			Approximate Size After Pass
	In Pass	Interval	Total	
1	1.6	3.2	4.8	22 1/2 x 22 in.
2	2.0	6.4	8.4	23 x 20 in.
3	1.8	3.6	5.4	20 1/2 x 20 in.
4	2.4	3.8	6.2	21 x 18 in.
5	1.8	3.6	5.4	21 1/2 x 16 in.
6	2.6	11.0	13.6	22 x 14 1/2 in.
7	3.2	3.0	6.0	14 1/4 x 20 in.
8	2.6	3.2	5.8	15 x 18 in.
9	4.0	3.4	7.4	15 1/4 x 16 in.
10	3.4	5.2	8.6	15 1/2 x 14 in.
11	4.0	4.2	8.2	14 1/4 x 12 1/4 in.
12	4.2	5.1	9.3	14 1/2 x 10 1/4 in.
13	3.4	2.8	6.2	10 3/4 x 11 1/2 in.
14	2.6	2.7	5.3	10 1/2 x 10 1/4 in.
15	4.7	7.1	11.8	10 5/8 x 9 in.
16	3.5	22.7	26.2	10 3/4 x 8 1/2 in.
17	4.4	...	4.4	8 1/2 x 9 in.
Total	52.2	91.0	143.2	

Fig. 3—Data Obtained from Rolling a 9500-Lb. Ingot, on a 40-In. 2-High, Reversing Mill, to a Bloom 8 1/2 x 9 In., in 17 Passes



records the total foot-pounds of work required to reduce the ingot to that section. He then reads in the area column the equivalent of $115\frac{1}{2}$ sq. in. and follows the same course as for the preceding section, and finds the total foot-pounds of work required to reduce the ingot to that area and, by subtraction, the total work required for the example. To find the rate of application of work, he must take into consideration time, both idle and working.

It will serve the purpose at present to assume that

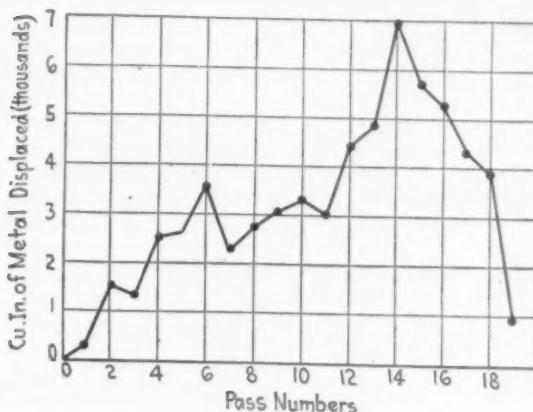


Fig. 4—Cubic Inches of Metal Displaced at Each of the 19 Passes Employed in Rolling a 6078-Lb. Ingot on a 35-In. 2-High Reversing Blooming Mill to a 4 x 4-In. Billet

the friction load is constant, although as a matter of fact it will be somewhat higher when the piece is engaged in the rolls than during the intervals between passes, due to increased pressure in the roll-housing bearings. The engineer finds the friction loss, using curve B, in a manner similar to the procedure for the total work on curve A. The difference between the total work for the pass and the friction loss for the same pass is net work.

Next must be taken into consideration the volume of metal displaced, where both area and the length of bloom are factors. By referring to curve E and selecting the nearest corresponding pass to the example, he finds the volumetric displacement for that pass by reading values on the horizontal lines limiting pass 6, and subtracting one from the other. He then reads the vertical ordinates from the intersections of curve E within the pass limits to the base line, to determine the time difference, which is the time required to displace that volume.

By finding the net work required for pass 6 as illustrated, and dividing by the time required to do the work, the net work rate of application can be arrived at; then by adding in similar manner the proportionate work for friction loss, the total work rate is determined. The ratio of work application to the engineer's problem may then be closely approximated by direct volumetric comparison. If the problem to be solved involves speeds different from those indicated, of course this must be allowed for. This all sounds complicated, but really is quite simple.

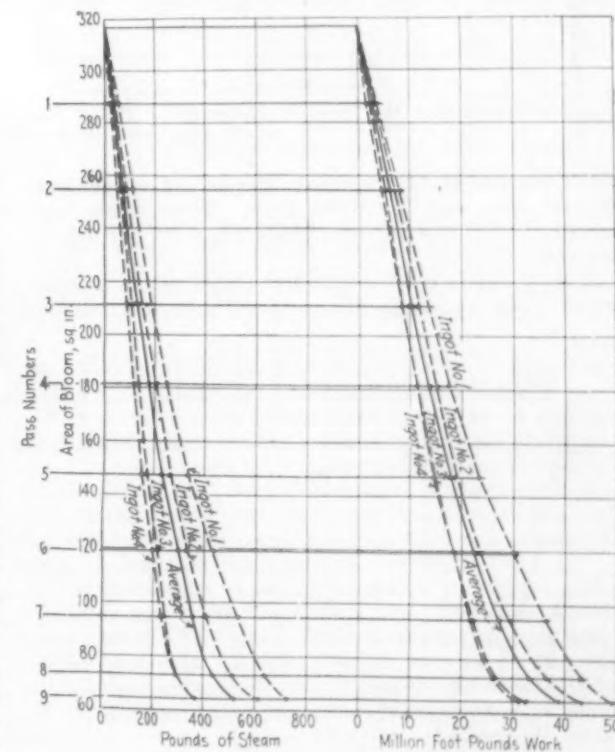
Analysis of the various charts will disclose the fact that there are wide variances in the amount of work required to displace a given volume of metal for similar rates of rolling. This probably is due to difference in rolling temperature, in some cases to different chemical analysis of the steel, to different friction loads and probably in some cases to internal engine leaks. There will be enough examples shown, however, to cover most ordinary cases.

Curve F, which shows the cubic inches of metal displaced per pass, should be of interest to operators. There are a number of similar curves on subsequent charts. Here the volumetric displacement is given vertical values. For instance, in pass 2 the displacement was 2183 cu. in., for pass 3 it was 2709 cu. in., and so on. It will be observed that the curve connecting the various ordinates is fairly regular and that the volumetric displacement tends to increase from pass to pass; this is as it should be.

Comparing the curve shown here with the curves for reversing mills, the latter are in most cases found quite irregular. This difference is due to two causes. First, general practice is to roll only one section through a single hole in a stand of three-high rolls and the roll turner has therefore opportunity to design his rolls to the best advantage, while in a reversing mill many passes may be taken through the same hole.

A second reason for the three-high mill curve being more regular is that the roller has no option other than to roll exactly as the roll designer intended, while with a two-high reversing mill the amount of draft taken in each pass and the number of passes used are matters of the roller's own choosing. The suggestion is made that, inasmuch as the volumetric displacement of the metal being rolled is easily ascertained, the operators may, in many instances, be benefited by having a similar analysis made as applying to their own practice.

Fig. 2 illustrates rolling practice on a steam engine-driven two-high reversing blooming mill, rolling an ingot weighing 5488 lb. in 21 passes into a 4 x 4-in. billet. The curve showing the cubic inches of metal displaced is fairly regular, but it will be noticed that the volume displaced per pass is in no case very heavy.



Pass No.	Time in Seconds			Approximate Size After Pass
	In Pass	Interval	Total	
1	...	...	3.33	$17\frac{1}{2} \times 16\frac{1}{2}$ in.
2	...	...	5.17	$17\frac{1}{2} \times 14\frac{1}{2}$ in.
3	...	...	3.53	$14\frac{1}{2} \times 14\frac{1}{2}$ in.
4	0.86	2.25	4.11	$14\frac{1}{2} \times 12\frac{1}{2}$ in.
5	1.08	3.00	4.08	$13 \times 11\frac{1}{2}$ in.
6	1.22	3.75	4.97	$13 \times 9\frac{1}{2}$ in.
7	1.54	2.55	4.09	$10\frac{1}{2} \times 9\frac{1}{2}$ in.
8	1.88	3.53	5.41	$10\frac{1}{2} \times 7\frac{1}{2}$ in.
9	2.19	4.29	6.48	8×5 in.
Total			41.17	

Fig. 5—Steam Consumption and Work Done in Rolling Four Ingots of 3880 Lb. Each on the 40-In. 3-High Mill Represented in Fig. 1. Nine passes reduced the sections to 4 x 4-In. Billets

A twin simple engine, 42 and 42×60 in., was geared to the rolls, the gears being 25 teeth for the engine end and 29 for the rolls, making a speed ratio of 0.862. Steam pressure at 145 lb. gage at throttle produced a mean effective pressure of 98.7 lb. at maximum load (1288 hp.); 66.6 lb. at maximum power (6602 hp.); 27.36 lb. at average load (988 hp.) and 4.84 lb. for the friction load. The mean back pressure was 2 lb. gage. The total work was represented by 108,022,000 ft.-lb.,

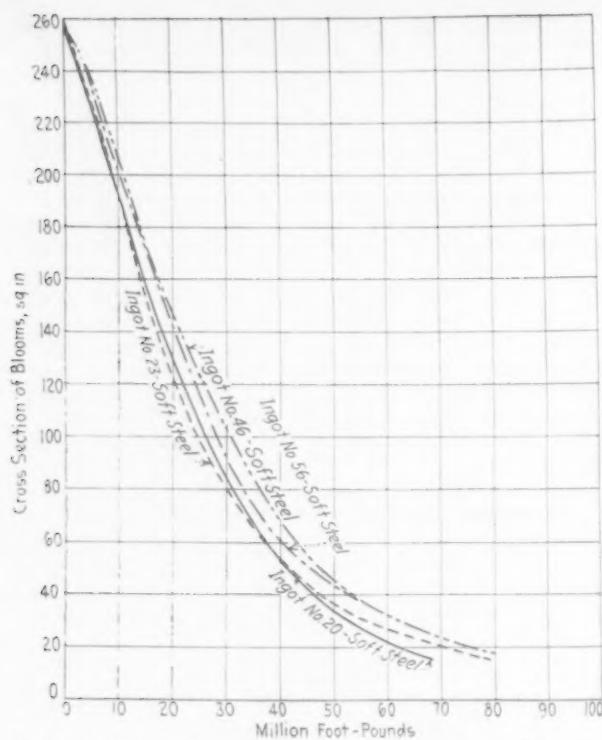
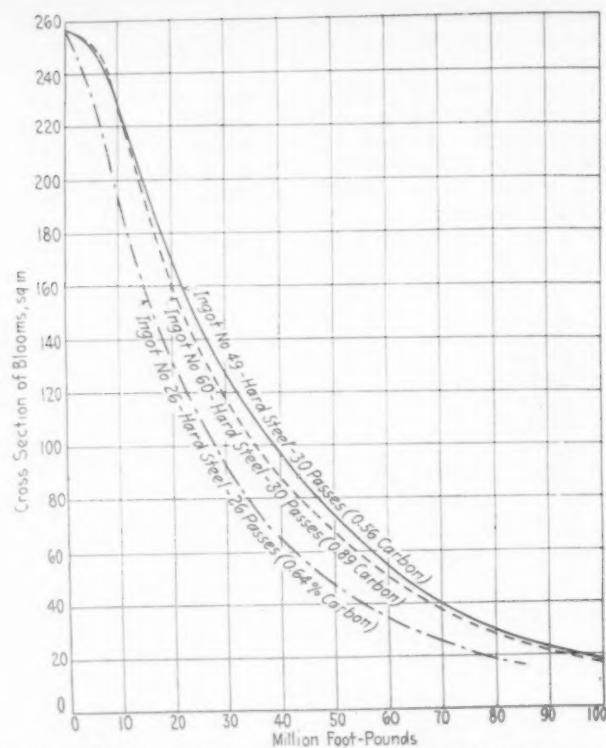


Fig. 6—Illustrating the Greater Amount of Work Required in Rolling Hard Steel Than With Soft Steel. The work was done on a 34-in. 2-high reversing mill

which represents 44,091,000 ft.-lb. per ton of product. Friction loss was 22,176,000 ft.-lb. Total steam consumption of 2137.3 lb. represents 872.4 lb. per ton of product.

Fig. 3 shows a 9500-lb. ingot rolled on an engine-driven 40-in. two-high blooming mill; it was reduced



to an 8 1/2 x 9 in. bloom in 17 passes. On the metal displacement curve it will be noted that a comparatively small amount of work was done on the second pass and from the fourth to the tenth pass inclusive and also on the fourteenth, fifteenth and sixteenth passes. One is inclined to believe that, if the design of the rolls

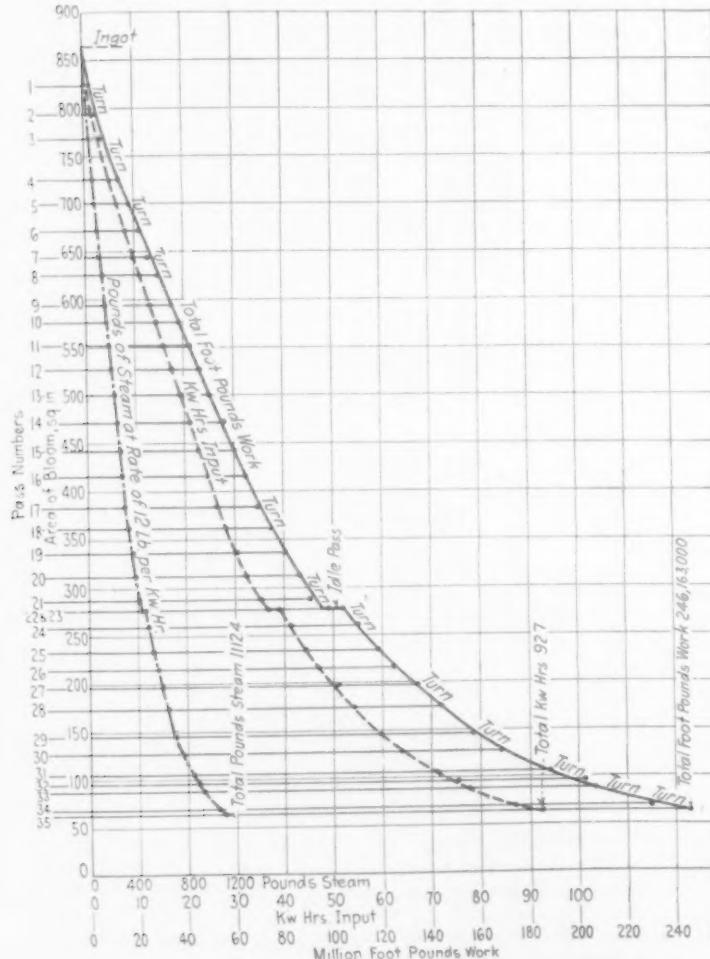


Fig. 7—Results of Motor Drive, with a 40-In. 2-High Reversing Mill, Handling a 27 x 32-In. Ingot Weighing 17,600 Lb. and Producing an 8 x 8-In. Bloom in 35 Passes

Pass No.	Speed for Each Pass, Ft. per Min.	Time in Seconds			Approximate Size After Pass
		In Pass	Inter- val	Total	
0	...	...	...	...	27 x 32 in.
1	198.6	2	8	10	27 x 30 1/2 in.
2	195.6	2	2.4	4.4	26 x 30 1/2 in.
3	203.4	2	6.8	8.8	25 x 30 1/2 in.
4	210.6	2	2.4	4.4	25 x 29 in.
5	192.6	2.3	6.3	8.6	25 x 28 in.
6	231.0	2	2.46	4.46	24 x 28 in.
7	201.0	2.4	6.6	9.0	23 x 28 in.
8	249.0	2	2.46	4.46	23 1/2 x 27 in.
9	218.4	2.4	6.3	8.7	23 1/4 x 25 1/2 in.
10	270.0	2.0	2.4	4.4	22 1/4 x 25 1/2 in.
11	206.4	2.73	2.26	4.99	21 x 26 1/4 in.
12	196.8	2.3	2.46	4.76	19 1/4 x 26 1/4 in.
13	202.8	3.06	2.3	5.36	18 1/2 x 27 in.
14	263.4	2.5	2.53	5.03	17 1/4 x 27 1/2 in.
15	256.2	2.73	2.3	5.03	16 x 27 1/2 in.
16	249.6	3.0	2.86	5.86	14 1/4 x 28 1/2 in.
17	268.8	3.0	2.26	5.26	13 1/2 x 28 1/2 in.
18	277.8	3.1	2.13	5.23	13 5/8 x 26 1/2 in.
19	261.0	3.53	2.6	6.13	13 3/8 x 24 1/2 in.
20	300.0	3.3	2.93	6.23	13 7/8 x 22 1/2 in.
21	295.8	3.66	5.0	8.66	14 x 20 1/4 in.
22	390.6	3.0	2.2	5.2	13 1/2 x 20 1/2 in.
23	390.6	3.0	5.93	8.93	
24	315.6	3.8	2.33	6.13	13 3/8 x 19 in.
25	336.6	4.0	2.66	6.66	13 3/4 x 17 in.
26	336.6	4.3	3.13	7.43	13 7/8 x 15 1/2 in.
27	366.0	4.33	4.06	8.39	14 x 14 in.
28	370.8	4.9	3.13	8.03	14 1/4 x 12 in.
29	388.8	5.53	4.8	10.33	14 1/2 x 10 in.
30	355.2	7.0	3.3	10.3	12 1/4 x 10 1/4 in.
31	462.6	6.33	3.33	9.66	10 x 10 1/2 in.
32	490.8	6.6	2.86	9.46	10 1/2 x 9 1/2 in.
33	531.0	6.73	5.73	12.46	10 1/4 x 8 1/2 in.
34	285.6	16.0	8.13	24.13	7 1/4 x 8 1/2 in.
35	597.6	8.13	...	8.13	8 x 8 in.
		Total	137.66	127.34	265.00

would permit, the number of passes might be reduced. This mill was driven by a twin simple engine 55 and 55 x 60 in., with steam pressure at 130 lb. gage at throttle. The mean effective pressure at maximum load (2209 hp.) was 92.5 lb.; at maximum power (3830 hp.) was 64.1 lb.; at average load (1076 hp.) was 24.1 lb.; at friction load, 3.8 lb. The mean back pressure was 1 lb. gage.

Fig. 4 shows the metal displacement on an ingot weighing 6078 lb., being reduced to a 4 x 4-in. billet in 19 passes on a 35-in. two high reversing mill, driven by a twin tandem compound reversing engine, 30½ and 50½ x 60 in., rated at 5000 hp. The average ft.-lb. of work done per cu. in. of metal displaced amounted to 1386.

In this instance the steam consumption was measured at the boiler house and includes boiler house and line losses. The steam was measured at the engine throttle for the other charts. The displacement curve is fairly regular but very light work was done on the initial passes.

Fig. 5 shows the pounds of steam and the million foot-pounds of work on four different ingots rolled in the three-high reversing mill that rolled the ingot described on Fig. 1. The reductions were the same. The heavy full line curves show the average for the four ingots. Attention is called to the wide variation

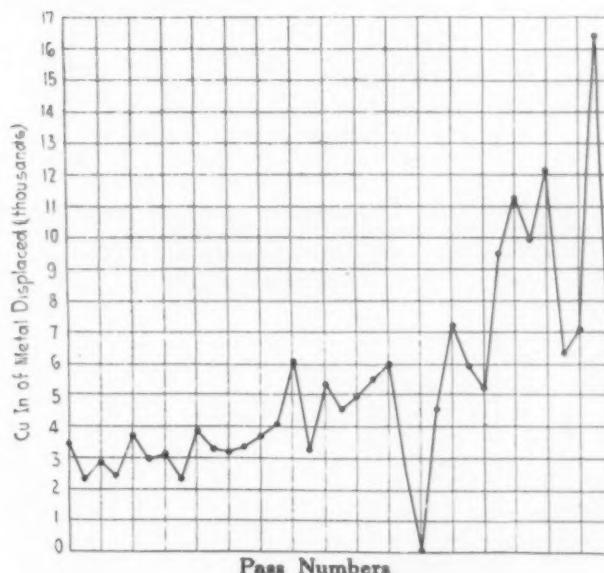


Fig. 8—Metal Displacement of the Operation Covered in Fig. 7. In the diagram is given the measure of the metal displaced at each of the 35 passes

in power requirements. In all probability temperatures had a great deal to do with this.

Fig. 6 shows work curves on seven ingots rolled on a 34-in. two-high mill. At the left are four different 4500-lb. low-carbon ingots. In each case the ingot was reduced in 24 passes to a 4 x 4-in. billet. At the right, ingots of the same weight were rolled, but of high carbon steel. The effect of the higher carbon steel on the load is clearly determined, one of the high-carbon ingots requiring 26 passes and the others 30 passes each.

Three high-carbon ingots, Nos. 26, 49 and 60, with initial areas of 248.6 to 255.2 sq. in., were rolled to 4-in. billets, the final areas being 15.5 to 16.8 sq. in. Carbon content varied from 0.56 to 0.89 per cent. The total ft.-lb. of work varied from 85,870,400 to 103,998,700, with an average of 97,935,500. The rolling time varied from 3 min. 35 sec., to 6 min. 8 sec., an average of 5 min. 6 sec.

Contrasted with this the four soft steel ingots, all of 0.07 per cent. carbon and the same weight as before, took much less power. These ingots varied from 247.5 to 254.4 sq. in. sections originally and the billets from 15.74 to 16.8 sq. in. The total rolling time varied from 2 min. 56 sec. to 5 min. 17 sec. with an average of 4

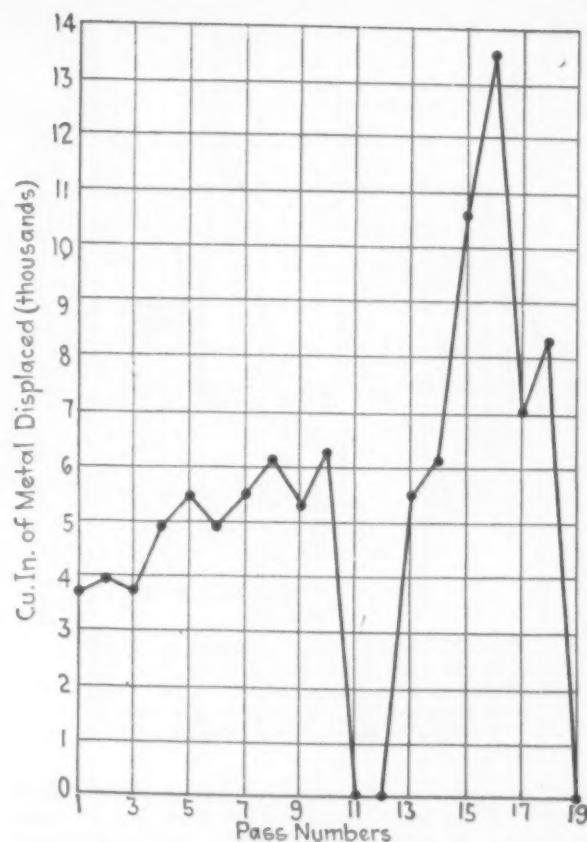


Fig. 9—Metal Displacement in Thousands of Cubic Inches in Rolling a 27 x 27-In. Ingot Weighing 14,000 Lb. Into a Bloom 8 x 10 In. in 19 Passes. This was on a 40-in. 2-high reversing mill and the time occupied was 2 min. 2 sec.

min. The total ft.-lb. of work per ingot varied from 68,170,000 to 80,490,300 and averaged 76,910,000.

Figs. 7 and 8 show curves taken from a 40-in. motor-driven two-high reversing mill rolling a 17,600-lb. ingot to a 8 x 8-in. bloom in 35 passes. The time of rolling was 4 min. 25 sec. The approximate average displacement in the passes was 1328.4 cu. in. of metal per sec. The reversing motor was rated at 5000 hp., with 600 volts. It had two armatures on the shaft.

The theoretical steam consumption curve was plotted here, based on the assumption that the motor was supplied with current from a modern steam-driven turbine generator having a water rate of 12 lb. per kwhr. By comparison with engine-driven examples it will be observed that the steam consumption is very low.

A study of the metal displacement curve indicates that the work was comparatively light up to the four-

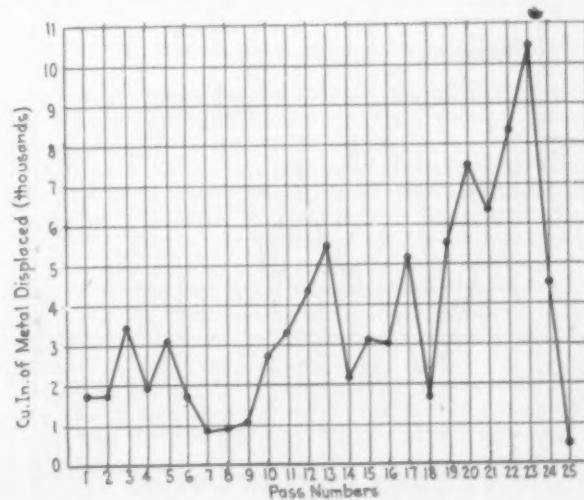


Fig. 10—Metal Displacement at Each Pass in Rolling a 25 x 30-In. Ingot Weighing 14,500 Lb. to a 9 x 10-In. Bloom in 25 Passes

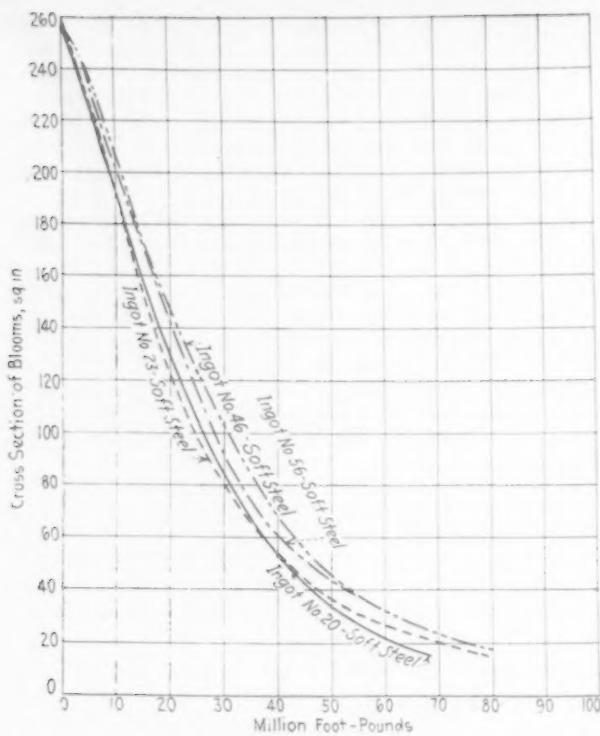


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Fig. 3 shows a 9500-lb. ingot rolled on an engine-driven 40-in. two-high blooming mill; it was reduced

to an 8½ x 9 in. bloom in 17 passes. On the metal displacement curve it will be noted that a comparatively small amount of work was done on the second pass and from the fourth to the tenth pass inclusive and also on the fourteenth, fifteenth and sixteenth passes. One is inclined to believe that, if the design of the rolls

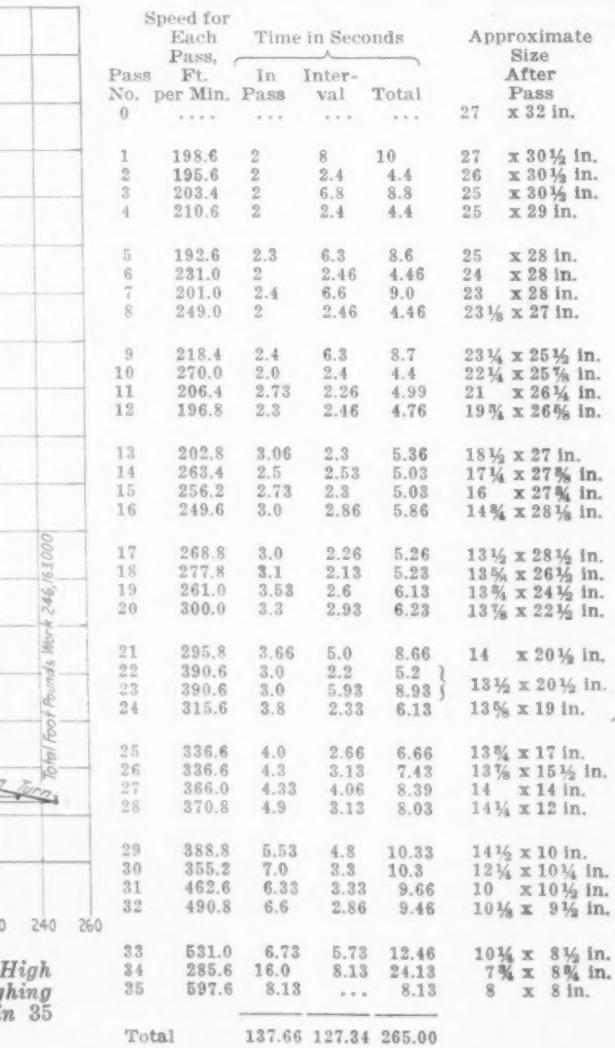
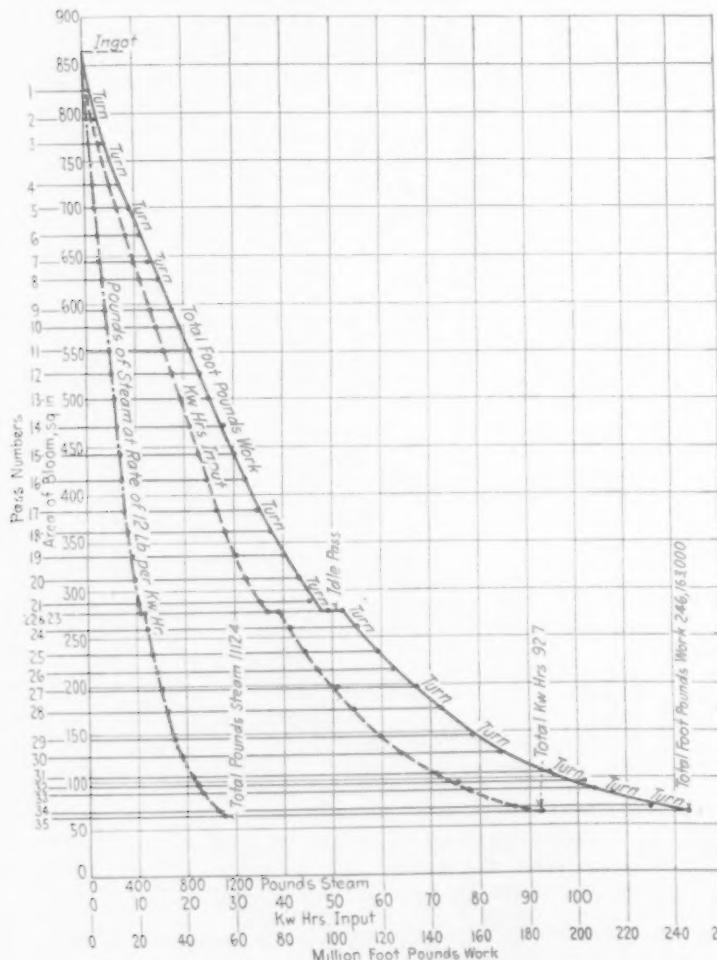
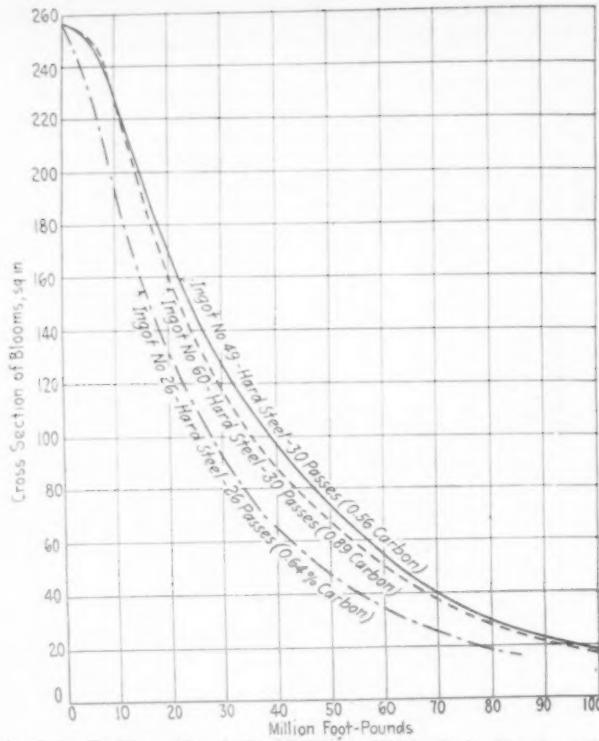


Fig. 7—Results of Motor Drive, with a 40-In. 2-High Reversing Mill, Handling a 27 x 32-In. Ingot Weighing 17,600 Lb. and Producing an 8 x 8-In. Bloom in 35 Passes



would permit, the number of passes might be reduced. This mill was driven by a twin simple engine 55 and 55 x 60 in., with steam pressure at 130 lb. gage at throttle. The mean effective pressure at maximum load (2209 hp.) was 92.5 lb.; at maximum power (3830 hp.) was 64.1 lb.; at average load (1076 hp.) was 24.1 lb.; at friction load, 3.8 lb. The mean back pressure was 1 lb. gage.

Fig. 4 shows the metal displacement on an ingot weighing 6078 lb., being reduced to a 4 x 4-in. billet in 19 passes on a 35-in. two high reversing mill, driven by a twin tandem compound reversing engine, 30½ and 50½ x 60 in., rated at 5000 hp. The average ft.-lb. of work done per cu. in. of metal displaced amounted to 1386.

In this instance the steam consumption was measured at the boiler house and includes boiler house and line losses. The steam was measured at the engine throttle for the other charts. The displacement curve is fairly regular but very light work was done on the initial passes.

Fig. 5 shows the pounds of steam and the million foot-pounds of work on four different ingots rolled in the three-high reversing mill that rolled the ingot described on Fig. 1. The reductions were the same. The heavy full line curves show the average for the four ingots. Attention is called to the wide variation

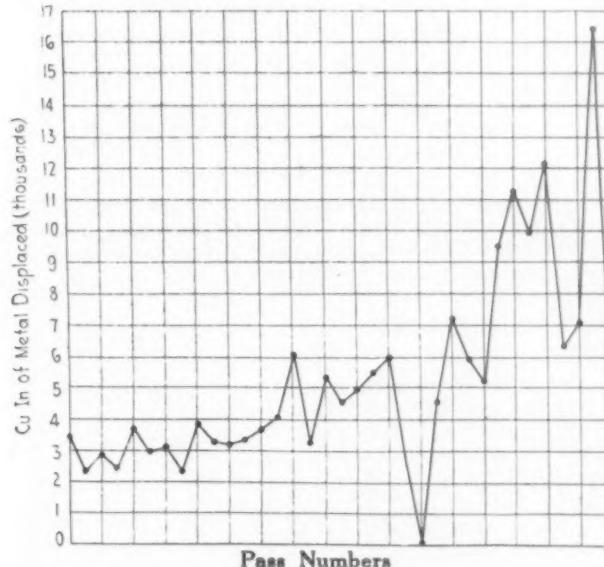


Fig. 8—Metal Displacement of the Operation Covered in Fig. 7. In the diagram is given the measure of the metal displaced at each of the 35 passes

in power requirements. In all probability temperatures had a great deal to do with this.

Fig. 6 shows work curves on seven ingots rolled on a 34-in. two-high mill. At the left are four different 4500-lb. low-carbon ingots. In each case the ingot was reduced in 24 passes to a 4 x 4-in. billet. At the right, ingots of the same weight were rolled, but of high carbon steel. The effect of the higher carbon steel on the load is clearly determined, one of the high-carbon ingots requiring 26 passes and the others 30 passes each.

Three high-carbon ingots, Nos. 26, 49 and 60, with initial areas of 248.6 to 255.2 sq. in., were rolled to 4-in. billets, the final areas being 15.5 to 16.8 sq. in. Carbon content varied from 0.56 to 0.89 per cent. The total ft.-lb. of work varied from 85,870,400 to 103,998,700, with an average of 97,935,500. The rolling time varied from 3 min. 35 sec., to 6 min. 8 sec., an average of 5 min. 6 sec.

Contrasted with this the four soft steel ingots, all of 0.07 per cent. carbon and the same weight as before, took much less power. These ingots varied from 247.5 to 254.4 sq. in. sections originally and the billets from 15.74 to 16.8 sq. in. The total rolling time varied from 2 min. 56 sec. to 5 min. 17 sec. with an average of 4

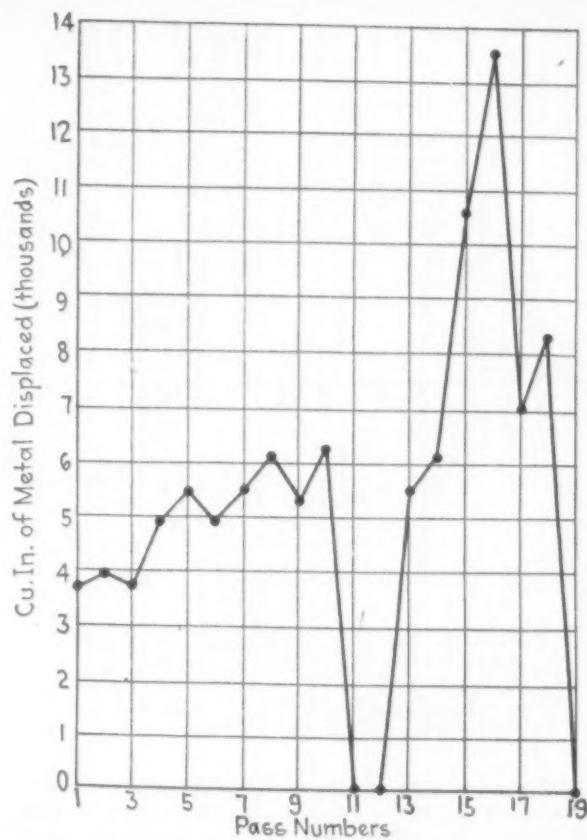


Fig. 9—Metal Displacement in Thousands of Cubic Inches in Rolling a 27 x 27-In. Ingot Weighing 14,000 Lb. Into a Bloom 8 x 10 In. in 19 Passes. This was on a 40-in. 2-high reversing mill and the time occupied was 2 min. 2 sec.

min. The total ft.-lb. of work per ingot varied from 68,170,000 to 80,490,300 and averaged 76,910,000.

Figs. 7 and 8 show curves taken from a 40-in. motor-driven two-high reversing mill rolling a 17,600-lb. ingot to a 8 x 8-in. bloom in 35 passes. The time of rolling was 4 min. 25 sec. The approximate average displacement in the passes was 1328.4 cu. in. of metal per sec. The reversing motor was rated at 5000 hp., with 600 volts. It had two armatures on the shaft.

The theoretical steam consumption curve was plotted here, based on the assumption that the motor was supplied with current from a modern steam-driven turbine generator having a water rate of 12 lb. per kWhr. By comparison with engine-driven examples it will be observed that the steam consumption is very low.

A study of the metal displacement curve indicates that the work was comparatively light up to the four-

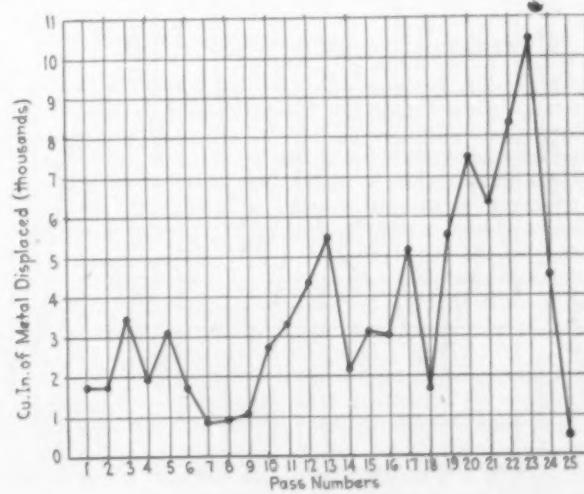


Fig. 10—Metal Displacement at Each Pass in Rolling a 25 x 30-In. Ingot Weighing 14,500 Lb. to a 9 x 10-In. Bloom in 25 Passes

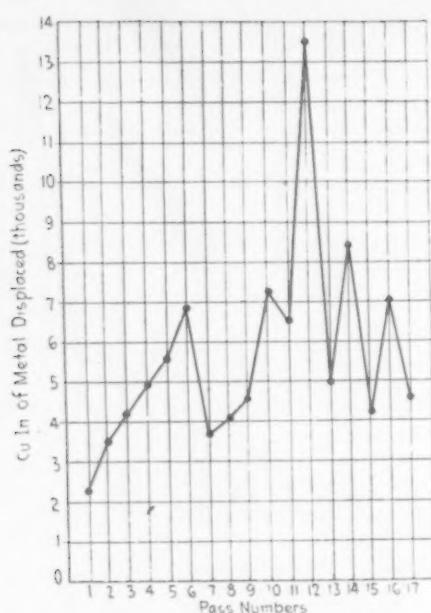


Fig. 11—Metal Displacement at Each Pass on a 40-In. Engine-Driven Mill Reducing a 22 x 24-In. Ingots, 78 In. Long and Weighing 11,500 Lb., to a Bloom of 6 1/4 x 6 1/4 In. in 17 Passes

teenth pass and in instances for passes beyond that. In many of the initial passes not over an inch of draft was taken. In contrast with this is the displacement curve on Fig. 9, where a 14,000-lb. ingot was reduced to an 8 x 10-in. billet in 19 passes, three of which were idle.

With the exception of the gap made by the idle passes, the displacement curve indicates excellent rolling practice. The first two idle passes were taken for the purpose of dressing up the bloom to remove collar marks. Evidently this was done on the last and finishing pass, also. This mill is also 40-in. two-high reversing and is driven by a 6000-hp. two-armature motor, using 650-volt current. The performance is one of the best examples of uniform, heavy rolling practice. The average displacement of metal in the passes was 1644.5 cu. in. per sec.

Fig. 10 illustrates the rolling practice of a 44-in. two-high reversing mill, driven by a 5800-hp. two-armature motor, taking current at 600 volts and rolling a 25 x 30-in. ingot weighing 14,500 lb. to a 9 x 10-in. bloom in 25 passes. As indicated by the displacement

curve, the reductions on the first nine passes were very light with the exception of passes 3 and 5. Very little work was done, also, in passes 14, 15, 16 and 18.

The ingot represented by Fig. 11 weighed 11,500 lb. It was reduced from a 22 x 24-in. section to a 6 1/4 x 6 1/4-in. bloom in 17 passes. This mill is engine driven. The engine was 42 and 66 x 60 in. tandem compound, reversing. The time of rolling was 1 min. 17 sec., and the approximate average displacement of metal in the passes was 2228.7 cu. in. per sec.

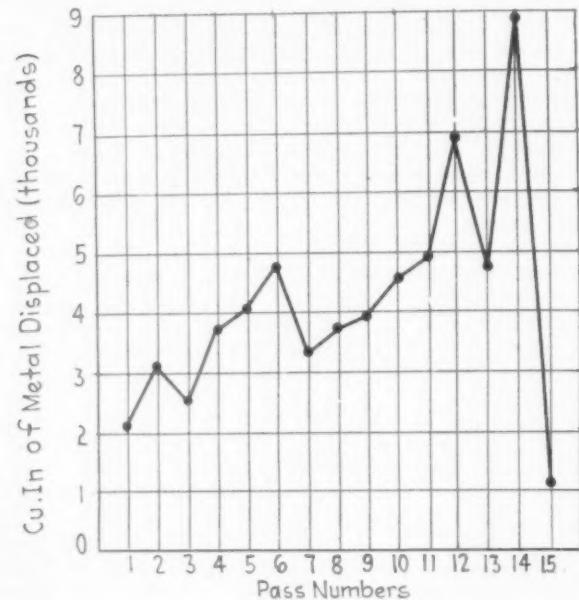


Fig. 13—Metal Displacement in Each Pass in Rolling a 20 x 24-In. Ingots, 80 In. Long and Weighing 8800 Lb., Into an 8 x 8-In. Bloom in 15 Passes

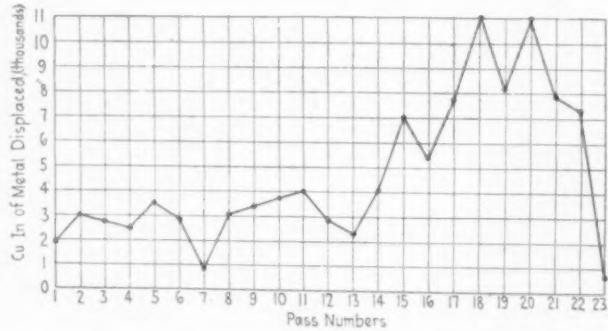


Fig. 14—Metal Displacement in Each Pass in Rolling a 25 x 30-In. Ingots, 80 In. Long and Weighing 14,500 Lb., Into a 9 x 9-In. Bloom in 23 Passes

It is not apparent why the metal in pass 12 was given such heavy reduction compared with other passes; possibly the design of the rolls had something to do with this. It probably has been noticed before this that, on nearly all the charts, it is shown that some one pass, near the completion of rolling, is given very heavy reduction by comparison with any others.

Fig. 12 shows the rolling practice in reducing a 25 x 25-in. ingot weighing 14,000 lb. to a 6 x 7 1/4-in. bloom in 23 passes. This 40-in. mill is driven by a 40 and 60 x 66-in. compound engine. The general practice indicated is somewhat better than the average, particularly during the later passes. The approximate average displacement of metal in the passes was 1645.6 cu. in. per sec.

Fig. 13 shows an 8800-lb. ingot rolled to an 8 x 8-in. bloom in 15 passes on a motor-driven 40-in. two-high reversing mill and represents average practice. The mill was driven by a 6500-hp. two-armature motor, at 600 volts. The approximate average displacement of metal in the passes was 1347 cu. in. per sec.

Figs. 14, 15 and 16 have been carefully worked out from test data furnished by one of the electrical ma-

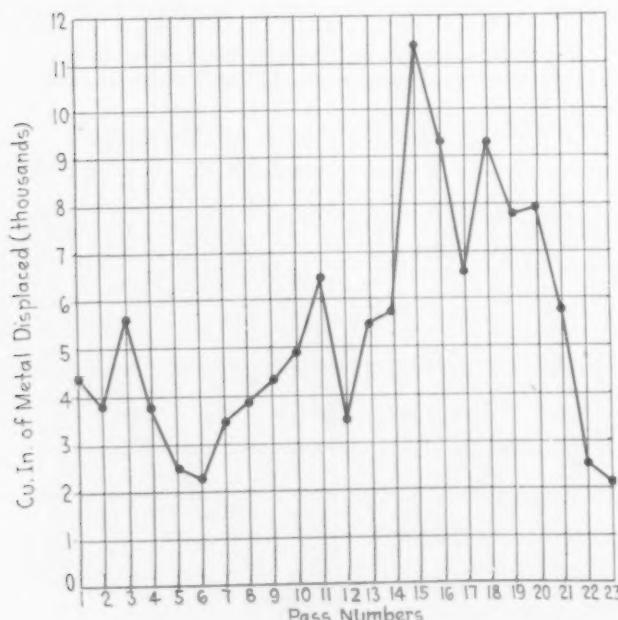


Fig. 12—Metal Displacement in Rolling a 25 x 25-In. Ingots, 80 In. Long and Weighing 14,000 Lb., Into a 6 x 7 1/4-In. Bloom in 23 Passes

chinery manufacturers. Fig. 14 represents displacement curves in rolling a 25 x 30-in. ingot weighing 14,500 lb. to a 9 x 9-in. bloom in 23 passes on a 44-in. two-high reversing mill driven by a 5800-hp. two-armature motor, at 600 volts. The time of rolling was 2 min. 12 sec. and the power consumption 15.4 kwhr. input per ton of steel.

Fig. 15 shows power curves pertaining to rolling a 3693-lb. ingot to a 3 1/2 x 4-in. billet in 19 passes on a 32-in. two-high reversing mill driven by a 3500-hp. motor with two armatures and operated at 525 volts d. c. The power input per ton of steel rolled is 22.1 kwhr.; the time of rolling an ingot 2 min. 13 sec., and the approximate average displacement of metal in the passes, 476 cu. in. per sec. Fig. 16 shows time and displacement curves for this ingot.

Analysis of Diagrams

Some of the diagrams given with the paper present information which makes it possible to compare the total work done with the amount of metal displacement. In a few of these cases it is possible to go further and compare the net work done, excluding friction load, with the metal displacement. Seven of the charts (Figs. 1, 2, 3, 4, 7, 14 and 15) show the total work in such shape that it can be compared with displacement, while the first four of that group show the net work also. It happens that the net work is shown only on the engine-driven mills, as no measure of the friction load was made on the motor-driven mills.

There were four cases under the engine-driven list and three under the motor-driven list which can be used. The data from these cases are shown in Table I, in which the calculation is made on the basis of the number of foot-pounds of work required to displace a cubic inch of metal, as revealed by the test. It will be noted from the table that in general the engine-driven mills displaced metal with a smaller amount of work than the motor-driven mills required.

The fact that the motor-driven mills proved more

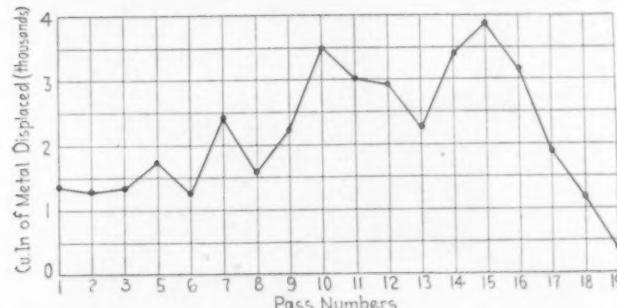
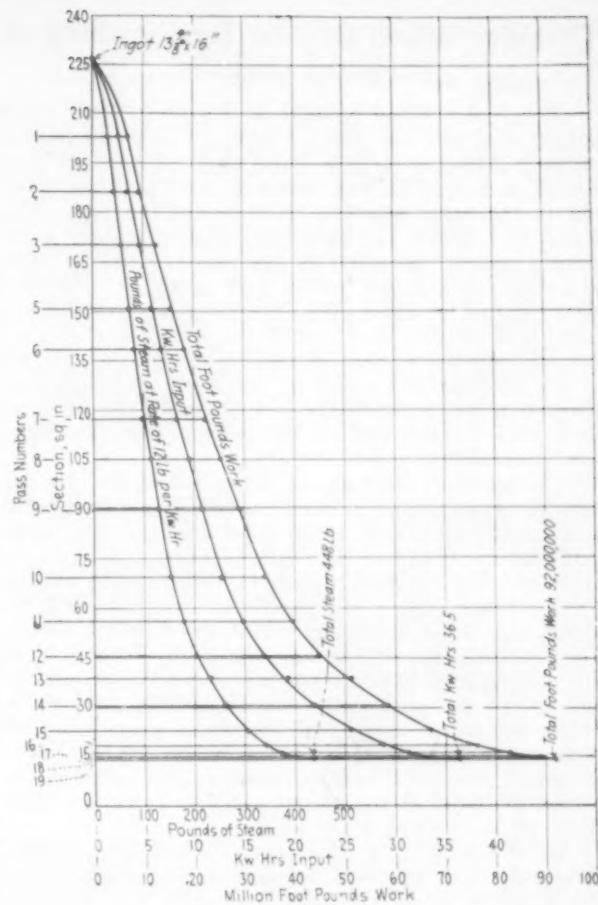


Fig. 16—Metal Displacement Curve for the Same Case Covered in Fig. 15

economical from the standpoint of steam consumption, which was brought out in the discussion on the original paper, may be accounted for perhaps by the greater economy in steam consumption of the prime mover itself, in the case of the motor drive. Certainly, from the record shown in Table I, the engine drive is fully holding its own in efficiency from the mill coupling to the finished billet.

Table I.—Work Expended for Metal Displacement

Fig.	Total Cu. In. Displaced	Total Ft.-Lb. Work	Ft.-Lb. Per Cu. In.	Net Ft.-Lb. Work	Net Cu. In. Per
1 (a)	26,306	40,500,000	1,539	28,000,000	1,064
2 (a)	60,810	108,022,000	1,777	85,846,000	1,412
3 (a)	64,740	84,600,000	1,307	71,250,000	1,101
4 (a)	62,700	117,100,000	1,867	94,385,000	1,505
7 (b)	182,720	246,163,000	1,347	.....	.....
14 (b)	106,460	266,000,000	2,499	.....	.....
15 (b)	38,730	92,000,000	2,375	.....	.....
Of above:					
(a) Engine-driven	214,556	350,222,000	1,632	.....	.....
(b) Motor-driven	327,910	604,163,000	1,842	.....	.....
Total	542,466	954,385,000	1,760	.....	.....



Pass No.	Speed, Ft. Per Min.	Time in Seconds			Approximate Size After Pass
		In Pass	Interval	Total	
1	222	2.3	2.8	5.1	13 1/4 x 14 1/2 in.
2	347	1.63	2.5	4.13	14 1/4 x 13 1/2 in.
3	260	1.85	7.0	8.85	14 1/4 x 11 1/2 in.
4 (Idle)...	...	...	...	...	...
5	218	2.12	1.7	3.82	12 1/2 x 12 1/2 in.
6	373	2.1	1.8	3.9	12 1/2 x 11 1/2 in.
7	327	2.25	4.0	6.25	12 1/2 x 9 1/2 in.
8	325	2.8	1.8	4.6	9 1/2 x 11 1/2 in.
9	319	2.6	2.6	5.2	9 1/2 x 9 1/2 in.
10	360	3.2	1.7	4.9	9 1/2 x 7 1/2 in.
11	352	3.5	3.5	7.0	9 1/2 x 5 1/2 in.
12	419	4.2	2.0	6.2	6 x 7 1/2 in.
13	427	4.35	2.3	6.65	6 x 6 1/2 in.
14	470	5.1	2.1	7.2	6 x 5 1/2 in.
15	494	6.45	8.0	14.45	6 x 3 1/2 in.
16	405	7.6	3.1	10.6	4 x 4 1/2 in.
17	520	9.5	2.7	12.2	4 1/2 x 3 1/2 in.
18	601	9.3	2.5	11.8	3 1/2 x 3 1/2 in.
19	567	10.38	10.0	20.38	4 1/2 x 3 1/2 in.
Total		81.23	62.10	143.33	

Fig. 15—Calculated Data of Power, Work and Equivalent Steam Consumption Required for Rolling a 13 1/2 x 16-In. Ingot, Weighing 3693 Lb., Into a 4 1/16 x 3 9/16-In. Bloom in 19 Passes

Steel Castings Sales Increase

WASHINGTON, Dec. 21.—Bookings of steel castings in November totaled 69,527 net tons, or 69.3 per cent of capacity, according to the Department of Commerce, based on reports from principal manufacturers representing more than two-thirds of commercial castings capacity. The total was the largest since January. It compares with a production of 61,044 tons in October, or 60.8 per cent of shop capacity. Of the November output, 31,993 tons was railroad specialties, or 74.4 per cent of that class of production. Production of miscellaneous castings in November amounted to 37,534 tons, or 65.4 per cent of capacity.

Total production of commercial steel castings during the 11 months ended with November of the present year was 646,235 tons, of which 252,310 tons was for railroad specialties and 393,925 tons was miscellaneous castings. For the corresponding period of last year total production amounted to 676,876 tons, of which 335,025 tons was for railroad specialties and 341,651 tons for miscellaneous purposes.

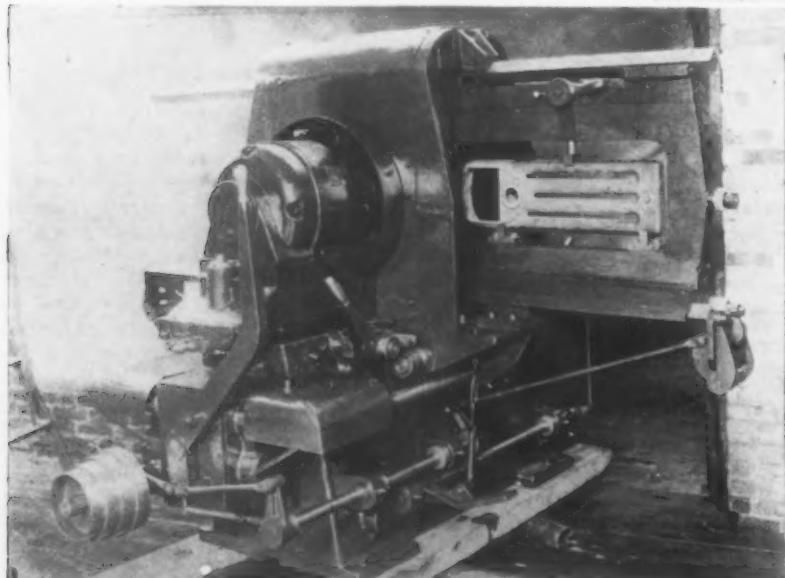
Cylinder Wheel Grinder for Finishing of Radiator Castings

A cylinder wheel grinder arranged for the rapid grinding of the two parallel sides of cast iron steam radiator sections is here illustrated. These castings are 26 in. long, 9 in. wide and 2 in. thick, and are cored out in the usual manner. At one end, on each side, there is a raised rib measuring approximately 9 in. square and $\frac{1}{4}$ in. wide; at the opposite end on each side there is a raised spacer boss $\frac{3}{8}$ in. in diameter. It is required to finish off both these areas in the same plane and parallel with the corresponding surfaces on the opposite side so that in assembling the radiator all of the sections will stand in uniformly perpendicular position, and to assure tight joints between the sections. Both sides of the casting are ground simultaneously and the grinding is done dry.

The machine, built by the Badger Tool Co., Beloit, Wis., and designated as the No. 221, is a two-spindle unit with two built-in type motor-driven heads, each carrying an 18-in. cylinder-wheel chuck and abrasive cylinder. The radiator casting is placed in the fixture shown, being supported beneath in two hardened V-blocks and locked at the top with a quick-acting clamp. The whole frame or carriage slides on V-ways, both top and bottom, passing between the grinding wheels and out at the back of the machine. The carriage is driven by motor through a four-speed gear box and rack and pinions. By throwing in the clutch lever, shown at the near end of machine, the carriage is caused to travel at the proper speed to the end of the slide, where it stops automatically.

When operated by two men, the operator at the front side locks the work in position and engages the clutch which sends the casting through the grinding wheels to the operator at the rear of the machine, who removes the finished casting, inserts a new one and sends it back to the man at the front. The machine may be operated by one man from the front side, in which case the operator reverses the control lever when the piece is part way through the machine, returning it to him at front.

Before the work enters the grinding heads the latter are opened by means of the foot treadle, after which the pressure on the treadle is removed and the grinding heads close upon the work up to micrometer stops. Special wheel dressers are mounted on each end of the carriage. Two $7\frac{1}{2}$ -hp. motors are employed, and are fitted with the company's end yoke construction. The spindles are mounted in both radial and thrust ball bearings. The grinding heads are provided with adjustment in all directions so that the wheels can be set accurately parallel, both top and bottom, front and rear, and in alignment with the cross travel of the carriage. The equipment as shown weighs 6200 lb. and requires an operating floor space of 9 x 10 ft.

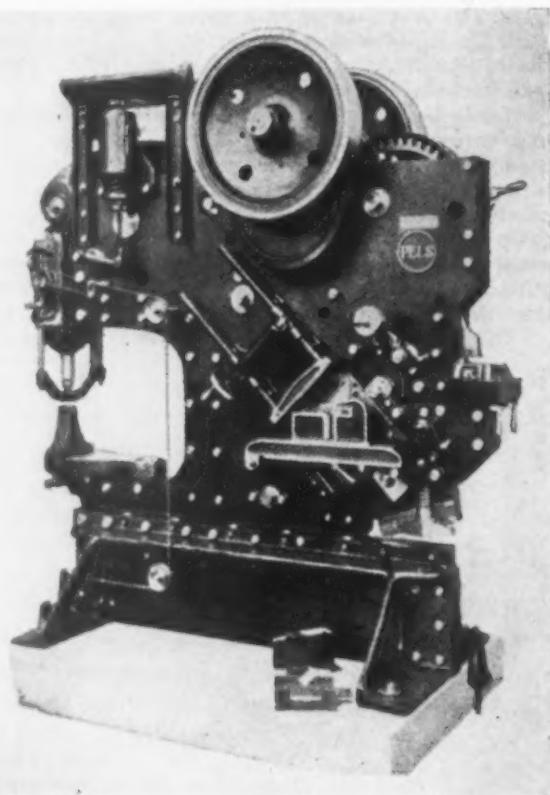


Punch and Shear with Built-in Coping Tool

A combination punch and shear with built-in coping tool, which can be operated either by hand or by a separate foot control and permits the coping of beams, channels and other shapes without change of knives or tools, has been added to the line of Henry Pels & Co., 90 West Street, New York.

In addition to the built-in coping tool other features of the machine, which is designated as the type Q-16, include the high throat for punching Bethlehem sections in the flange or the web. The punch is of the full floating type and the punch stripper is adjustable and may be removed conveniently. The plate hold-down is operated by a worm gear and is of the one-spindle type. The angle hold-down is of the two spindle type.

Another feature of the new design is the use of rollers in the splitting shear channel which is intended to facilitate the feeding of the plate to the knives. Extra long splitting shear blades are provided. The center knives regularly furnished will cut bars, angles and tees, but they may be replaced conveniently by knives for cutting beams, channels and special shapes. As in the case of all other machines made by this company, the frame is of heat-treated steel plate.

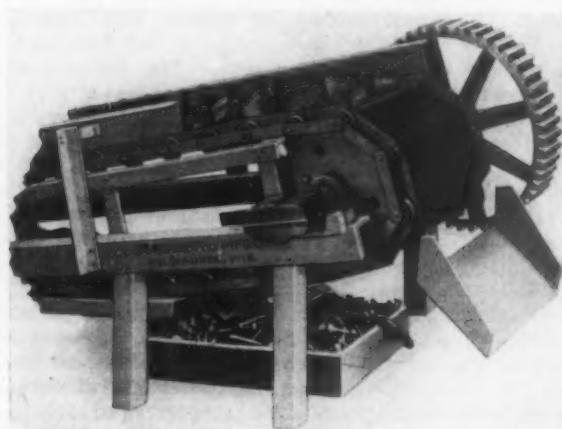


The Coping Tool on Punch and Shear Shown Above May Be Operated by Hand or Foot. The tool permits coping of beams and other shapes without change of knives

The Cylinder Wheel Grinder Shown at the Left Is Equipped for Grinding Both Sides of Radiator Castings Simultaneously. The work-holding fixture permits quick loading, and is arranged to slide between the grinding wheels

Magnetic Pulley for Separating Tramp Iron from Coal, Ore or Sand

A new magnetic pulley adapted to operate in the discharge end of steel apron and pan conveyors has been brought out by the Magnetic Mfg. Co., Milwaukee. The device is employed for extracting tramp iron from coal and ore and in separating iron from foundry sand, and is of particular advantage perhaps where



The Pulley Is Mounted at Discharge End of Steel Apron or Pan Conveyors. The tramp iron drops into receptacle below the pulley

apron conveyors are used to deliver material from hoppers directly to pulverizers or crushers. It may be applied to conveyors already in use, as well as to new conveyor installations.

Material in large amounts and of considerable depth is usually handled on apron or pan conveyors. To effect separation under these conditions the magnetic pulley illustrated has been designed to give large radiating surfaces and extended magnet poles, adapted to conform to the shape and size of the apron used, bringing the poles into intimate contact with the steel apron so as to magnetize inductively the apron surface. The magnetic lines of force are said to be distributed over the entire surface of the conveyor, at the discharge end the magnetic lines producing a deep and powerful magnetic field. This magnetic field begins at a point about 6 in. ahead of the sprockets, on top of the conveyor, and ends at a point about 6 in. behind the center of the sprockets at the bottom, where the discharge of the tramp iron takes place.

As this type of conveyor is operated at relatively low speeds, the conveyed material has a tendency to cascade or slide over the delivery end, bringing it into close contact with the magnetized surfaces of the steel apron plates. In this way, it is explained, the magnetic pulley has an opportunity to seize the particles of iron firmly until discharged.

The magnetic apron pulley is mounted on the shaft between the regular drive sprockets, the shaft having a drive extension on the other end. To adapt the device to existing conveyor installations little or no change in the installation is said to be necessary. To facilitate changing, however, it is desirable to provide the unit with new shaft and sprockets. Direct current is required for energizing the magnetic pulley, but if direct current is not available, a small motor-generator unit may be used to supply the current for the magnet.

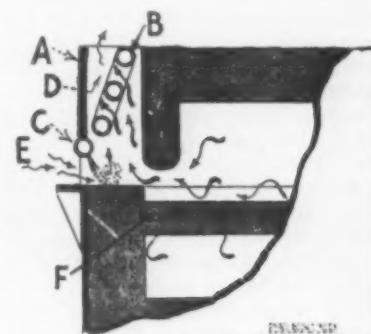
New Heat-Treating Furnace

Comfortable operation and better heating conditions for the metal, resulting in larger output, better quality and lower cost, are among the advantages claimed for a new heat-treating furnace of the "economizer shield" type, which is being placed on the market by the W. S. Rockwell Co., 50 Church Street, New York.

The furnace is of the under-fired type and is arranged so that a hot hearth is maintained under the front wall of the heating chamber. The economizer

shield is designed to protect the workman, and the heat in the waste gases is utilized to preheat the air for combustion, the arrangement for accomplishing these being shown in the illustration herewith: The shield is shown at *A*, the preheater at *B*, the blast pipe at *C*, the path of the hot gas at *D*, the path of the induced air at *E*, and the hot hearth under the front wall at *F*.

The new furnace is said to have been developed to meet the need of better heating practice, more comfortable working conditions in the heat treatment of a variety of small ferrous and non-ferrous metal parts and to meet the requirements for reasonably continuous production without automatic furnaces. The latter requirement is said to be closely approached with a group of several of these furnaces arranged for operation by one man, such equipment being flexible because



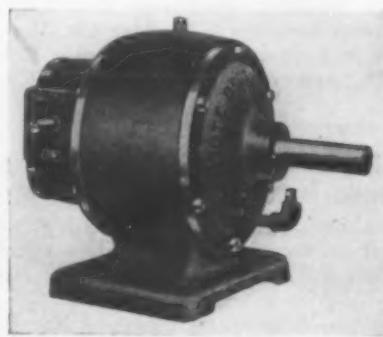
each furnace may be adjusted to meet variable requirements of time, temperature and load.

The fuel may be either oil, gas or electricity. Designs in stationary, semi-automatic and automatic types, with single or multiple chambers at one or both ends, are available.

Right-Angle-Drive Speed Reducers

Right-angle-drive spur-gear speed reducers for use in confined spaces and where it is necessary to change the direction of the drive, have been added to the IXL line of the Foote Brothers Gear & Machine Co., 215 North Curtis Street, Chicago.

In this unit the high-speed shaft projects at right angles to the axis of the slow-speed shaft, the change in direction of the drive being accomplished by means of bevel or miter gears mounted in the high-speed end. The secondary bevel or miter gear is mounted on the



Spur Gear Reduction Unit for Use in Confined Spaces and for Changing Direction of Drive

high-speed driving shaft, which is concentric with the slow-speed shaft.

Except for the addition of the bevel gears in the high-speed end, the design of the machine is the same as that of the company's IXL non-planetary spur gear speed reducer previously described in *THE IRON AGE*. The high-speed pinion is integral with the high-speed shaft and delivers the power through three idler gears set 120 deg. to the axis of a large internal gear, the latter being fastened to the slow-speed shaft. Various speed ratios between the high- and low-speed shafts may be obtained by changing the size of the pinion and bevel gears. The right-angle units are available in a variety of standard sizes and ratios, up to 150 hp. and in reduction ratios up to 350 to 1.

The 1926 Meetings of American Electro-chemists

Plans for the spring meeting of the American Electrochemical Society at the Chicago Beach Hotel, Chicago, April 22 to 24, 1926, include as features a symposium on chlorine under the chairmanship of D. A. Pritchard, works manager Canadian Salt Co., Ltd., Windsor, Ont., and a round table discussion on "Comparative Merits of Electric and Fuel-Fired Furnaces." Another round table discussion on some subject connected with the electrodeposition industry is to be announced later.

On Thursday evening, April 22, W. J. Orchard, of Wallace & Tiernan, Newark, N. J., will deliver an illustrated lecture on "Chlorine in Sanitation." Trips are scheduled to various industrial plants, among which are the Gary furnaces, Commonwealth Super-Power Co., the Western Electric Co. and others. One technical session will be held at the University of Chicago, which is but a short distance from the Chicago Beach Hotel.

The fall meeting of the society has been provisionally scheduled for Oct. 7, 8 and 9, 1926, at Washington. Dr. William Blum, of the Bureau of Standards, is chairman of the local committee. A feature of the technical program will be a symposium on "Materials for Extreme Conditions in the Electrochemical Industries" under the chairmanship of Dr. H. W. Gillett, chief division of metallurgy, Bureau of Standards.

A proposition is under consideration by the board of directors and the members that the fall meeting of 1927 consist of a trip through the Northwest, similar to the Southern trip of the society in 1918. With Chicago as the starting point, various cities, such as Minneapolis; Great Falls, Butte and Anaconda, Mont.; Spokane and Seattle, Wash.; Portland, Ore.; Salt Lake City; and Denver, are proposed in the itinerary.

American Machinery at Lyon Fair

Several manufacturers of machine tools will be represented at the Lyon Fair, to be held at Lyon, France, March 1, through March 14.

Among the American exhibitors will be the Brown & Sharpe Mfg. Co., Providence; W. F. & John Barnes Co., Rockford, Ill.; Reed-Prentice Co., Worcester; Gleason Works, Rochester; Arter Grinding Machine Co., Worcester; Rivett Lathe Co., Boston; Porter-Cable Machine Co., Syracuse, N. Y.; Diamond Machine Co., Providence; Fosdick Machine Tool Co., Cincinnati; Taylor & Fenn Co., Hartford; Rhodes Mfg. Co., Hartford, and the Hanson-Whitney Co., Hartford. Other exhibitors will be the National Machinery Co., Tiffin, Ohio; Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.; Billings & Spencer Co., Hartford; Erie Foundry Co., Erie, Pa., and the Ferracute Machine Co., Bridgeton, N. J.

Amendment to Long and Short Haul Clause Introduced

A bill introduced Dec. 8 by Senator Gooding, of Kansas, provides that Section 4 of the Interstate Commerce Act be amended by adding the following paragraph:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that Section 4 of the Interstate Commerce Act, as amended, is hereby amended by adding thereto a new paragraph as follows:

"No common carrier shall be authorized to charge less for a longer than a shorter distance for the transportation of passengers or of a like kind of property, over the same line or route in the same direction, the shorter being included within the longer distance, on account of water competition either actual or potential or direct or indirect; provided that such authorization, on account of water competition, as may be lawfully in effect on Dec. 7, 1925, shall not be required to be changed except upon the further order of the commission; and provided further, that the provisions of this paragraph shall not apply to rates on import and ex-

port traffic, including traffic coming from or destined to a possession or dependency of the United States."

Babcock & Wilcox Co. Buys Powdered Coal and Meter Companies

The Babcock & Wilcox Co. announces that it has purchased the Fuller-Lehigh Co. and its subsidiaries, manufacturers of pulverized fuel and cement mill equipment; also that it has purchased the Bailey Meter Co., manufacturer of meters and recorders, combustion control equipment, pulverized fuel feeders, and water cooled furnace walls. The Fuller-Lehigh Co. and the Bailey Meter Co. will be operated with the same organizations as heretofore, with the exception that Col. J. W. Fuller will become chairman of the board of the Fuller-Lehigh Co., E. G. Bailey will become president, and A. E. Douglass of the Fuller-Lehigh Co. will become vice-president in charge of sales. Mr. Bailey will continue to act as president of the Bailey Meter Co., and R. S. Coffin will continue as vice-president and general manager.

By the acquisition of these companies the Babcock & Wilcox Co. will be able to offer boilers, superheaters, economizers, air heaters, chain grate stokers, oil burners, pulverized fuel equipment, water cooled furnace walls, meters, and combustion control equipment; all in any combination that may be required to supply complete steam generating units.

Change in Car Design Increases Ford Steel Needs

The increase in consumption of steel sheets by the Ford Motor Co., resulting from changing over to all steel car bodies, will amount to over 38,000 tons a year. Changing the design of the running board and shield has added 5000 tons more to the company's annual steel requirements and the enlargement of the gasoline tank will take 2000 tons additional. It is estimated that a year's production of the enlarged brakes will require 13,000 tons more of cast iron and 10,000 tons more of steel than heretofore.

Boiler Furnace Refractories

Refractory materials, no less than others, are subjected to temperature expansion and contraction, and it was pointed out in a paper read before the annual meeting in New York of the American Society of Mechanical Engineers by E. B. Powell, consulting engineer, Stone & Webster, Inc., Boston, that many a boiler wall has failed through neglect of allowing for this factor.

One speaker pointed out in the discussion that spalling of brick calls for one characteristic of the material, while resistance to slag erosion calls for another and quite different characteristic. In fact the two are virtually contradictory. He stated that it is not uncommon to find a specification calling for one of these characteristics in a degree difficult for the manufacturer to meet, while at the same time it calls for the other characteristic in an equally difficult degree. Combined in this manner, the specification is an utter impossibility.

Several speakers asserted there was need of team work between manufacturers of refractories and users. Only by cooperation can the best results be obtained. This would presuppose an intimate knowledge on the part of the manufacturers of the way his brick were used and some knowledge on the part of the user of how the different characteristics of a brick could be obtained and under what limitations.

The Wallace Barnes Co., Bristol, Conn., has purchased a minority interest in the Washburn Wire Co., Phillipsdale, R. I. The Rhode Island plant has furnished the Wallace Barnes Co. with raw material for the production of springs, and the purchase of a stock interest is for the purpose of establishing closer connections between the two companies.

Continental Markets Steadier

French Mills Still Taking Bulk of Export Trade —Lower Finished Steel Prices Expected

(By Cablegram)

LONDON, ENGLAND, Dec. 21.

CLEVELAND pig iron is quiet but steady at the fixed minimum prices and hematite is active, but supplies of the latter are scarce owing to the irregular output. Prompt iron is unobtainable and higher prices are being asked for forward shipment. Foreign ore is dull with Bilbao Rubio quoted at 21s. to 21s. 3d. c.i.f. Tees. There is an improved domestic demand and moderate export inquiry for finished steel with some prices tending upward, but little substantial export business is reported.

The tin plate market is easier with a smaller volume of sales at prices down to 19s. 4½d., base f.o.b., accepted for ordinary sizes. Makers, however, are generally asking 19s. 9d. to 20s. base. Galvanized sheets are quiet but makers are well sold up for several weeks and prices steady. A moderate demand for Far Eastern specifications on black sheets is reported, but other export markets are inactive.

Continental iron and steel markets are active, particularly in sales to British users, but prices have stiffened as a result of decreasing Continental supplies. The Belgian lockout in the Charleroi district continues and French works generally are not quoting. German makers are barely competitive in most cases. Belgian billets have sold at £4 9s. 6d. (\$21.70) f.o.b. and sheet bars at £4 12s. 6d. f.o.b. up to £4 15s. f.o.b. (\$22.42 to \$23.03). Wire rods have been sold at £5 16s. (\$28.12) f.o.b.

Continental Mills Continue to Sell in England— Vickers Writes Off £12,500,000

LONDON, ENGLAND, Dec. 10.—The chief feature of interest in the iron and steel market has been the fixing of a minimum price for Cleveland pig iron by the manufacturers and the consequent increase of prices.

The reason given for this step is that costs of production have increased materially as a result of higher cost of fuel and as makers have some time been working at a loss, the consumer must bear the extra burden. Hence Cleveland iron has been advanced 6d. with a further 6d. charged on orders for export, making a total advance of 1s. in the export quotations. The direct result of this has been curtailment of buying, especially by foreign users, while in the domestic market the possibility of Cleveland iron penetrating to other parts of the country is at the moment decreased. Hematite is in rather a different position and with a good demand more furnaces have been blown in and prices, while there is no fixed minimum, have strengthened to 7s. 6d. (\$18.27) with no export premium charged.

In steel conditions are still much as they have been for some time past. A few orders are being booked, but the bulk of the export trade has been going to the French mills, which are in a position to offer more favorable terms as a result of the depreciated franc. Although there is more confidence that business will be better in the coming year, despite the reductions made by British mills in the past week or two. Continental mills are still able to sell British users at favorable prices. The only objection of consumers to the purchase of foreign steel at present is the uncertainty in deliveries resulting from the restriction of output, particularly in Belgium, where the strike in the Charleroi district is still unsettled.

The depressed state of the British iron and steel markets during the past five years has resulted in many of the big works showing continued losses each year and considerable comment has resulted from the recent action taken by Messrs. Vickers, Ltd., one of the large steel and shipbuilding companies. This company, like many others, increased its capital considerably and pur-

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.85 per £, as follows:

Durham coke, del'd.	£1	1½s. to £1	2s.	\$5.19 to	\$5.32
Bilbao Rubio ore	1	0½		4.97	
Cleveland No. 1 fdy.	3	9 and 3	9½*	16.73 and	16.74*
Cleveland No. 3 fdy.	3	6		16.00	
Cleveland No. 4 fdy.	3	5½ and 3	6*	15.88 and	16.00*
Cleveland No. 4 forge	3	5 and 3	5½*	15.76 and	15.88*
Cleveland basic	3	5		15.76	
East Coast mixed	3	15½ to 3	16	18.29 to	18.40
East Coast hematite	4	19		24.00	
Ferromanganese	15	10		75.18	
*Ferromanganese	15	5		73.96	
Rails, 60 lb. and up.	7	10 to 8	0	36.37 to	38.80
Billets	6	0 to 7	10	29.10 to	36.37
Sheets and tin plate bars, Welsh	6	5		30.31	
Tin plates, base box	0	19½ to 1	0	4.72 to	4.90
				C. per Lb.	
Ship plates	7	5 to 7	15	1.57 to	1.67
Boiler plates	11	0 to 11	10	2.56 to	2.67
Tees	7	7½ to 7	17½	1.59 to	1.69
Channels	6	12½ to 7	2½	1.43 to	1.54
Beams	6	7½ to 6	17½	1.38 to	1.48
Round bars, ¾ to 3 in.	7	17½ to 8	7½	1.67 to	1.81
Steel hoops	10	10 and 11	0*	2.27 and	2.35*
Black sheets, 24 gage	11	5 to 11	10	2.44 to	2.67
Black sheets, Japanese specifications	15	5		3.30	
Galv. sheets, 24 gage	16	10 to 16	15	3.57 to	3.61
Cold rolled steel strip, 20 gage	18	0		3.90	

*Export price.

†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

Foundry pig iron:(a)					
Belgium	£2	19s.	to £3	1s.	\$14.30 to
France	2	19	to 3	1	14.30 to
Luxemburg	2	19	to 3	1	14.30 to
Basic pig iron:(a)					
Belgium	2	18	to 3	0	14.05 to
France	2	18	to 3	0	14.05 to
Luxemburg	2	18	to 3	0	14.05 to
Coke	0	18			4.87
Billets:					
Belgium	4	9½	to 4	11½	21.70 to
France	4	9½	to 4	11½	21.70 to
					22.18
Merchant bars:					C. per Lb.
Belgium	5	7	to 5	8	1.16 to
Luxemburg	5	7	to 5	8	1.16 to
France	5	7	to 5	8	1.16 to
Joists (beams):					
Belgium	5	0	to 5	2½	1.08 to
Luxemburg	5	0	to 5	2½	1.08 to
France	5	0	to 5	2½	1.08 to
Angles:					
Belgium	5	2	to 5	4	1.12 to
½-in. plates:					
Belgium	6	5	to 6	7½	1.35 to
Germany	6	5	to 6	7½	1.35 to
¾-in. ship plates:					
Belgium	5	10	to 5	12½	1.19 to
Luxemburg	5	10	to 5	12½	1.19 to
					1.20
Sheets, heavy:					
Belgium	6	3	to 6	4	1.22 to
Germany	6	3	to 6	4	1.22 to
					1.34

(a) Nominal.

chased other companies after the war. The recommendations of an independent financial committee have been approved, and are briefly as follows: The value of the assets of the company are to be written down by about £12,500,000 and the ordinary capital of the company is to be reduced by more than one-half. The total capital is £25,500,000 and it is to be reduced to about £18,000,000 by reducing the value of the £12,315,483 common shares from £1 to 6s. 8d. each thus writing off £8,210,322 to be charged against reserves and the profit and loss account. The reasons given for the loss

of so much capital are as follows: General depression in trade, depreciation in foreign exchanges, reduced earning capacity in the company's own works, attributable to world reduction in armament expenditure, domestic production of armaments by foreign countries, decline in shipbuilding, foreign competition in world markets and financial stringency and political unrest in Europe which has restricted the giving of credit and retarded schemes of development. This is the largest financial reconstruction of any British concern since the war.

BELGIAN PRICES STRONGER

Mills Adopt Firmer Attitude as French Competition Declines—Export Sales Small

BRUSSELS, BELGIUM, Dec. 11.—Conditions in the iron and steel markets continue as unsettled as ever, but in some quarters it is believed that prospects of improved business are better, despite the insufficiency of orders for many products and the continued competition of French mills aided by the depreciated franc. The continued strike in the Charleroi district is cause for some pessimism, it being pointed out that despite the loss of about 100,000 tons per month, or about a half-million tons in the five months of the strike, steel prices have declined, so that settlement of the strike and return to activity of this capacity may cause additional depression of the market.

Further decline in prices of finished material seems so certain that large British and German export sellers have been offering bars in London and Hamburg at £5 3s. per ton (\$24.98), while the current market price is £5 4s. to £5 5s. per ton (\$25.22 to \$25.46), f.o.b. Antwerp. In the domestic market, however, bars are firmer, but sheets continue weak. In the Liege district mills are well booked with export business and, with little tonnage available, prices are being strongly held.

Pig Iron.—Although the market is unsettled in the face of keen competition from French furnaces, prices are being held fairly firm, except for occasional concessions. Luxemburg furnaces are firmer and no concessions are reported being made from the current quotation of 320 fr. per ton, f.o.b. Antwerp, for No. 3 P.L. foundry. This is comparable to the price of both Belgian and French furnaces of 310 to 315 fr. per ton, either f.o.b. Antwerp or delivered consumer's mill.

Semi-Finished Material.—Prices are largely nominal in the absence of transactions. Demand has improved, but few mills are in the market for tonnage at present. Much of the recent increase in inquiry has apparently been from British consumers anxious to cover for sizable lots of material. Belgian quotations are £4 3s. (\$20.12) for blooms, an advance of 1s. since last week, £4 7s. (\$21.09) for billets and £4 11s. (\$22.06) for sheet bars. Luxemburg prices are the same. Lorraine mills are quoting 6d. per ton less than the Belgian makers on blooms and 1s. less on sheet bars.

Finished Material.—The slight improvement that set in recently is continuing, although demand is still light and competition from French and German sellers is a factor. French competition, however, is declining somewhat as the mills are rather well filled with business. As a result Belgian and Luxemburg mills have been able to maintain prices far better than formerly. Bars are quoted by Belgian mills at £5 4s. to £5 5s. (\$25.22 to \$25.46) per ton, with Luxemburg mills 6d. to 1s. per ton higher. The average domestic price is 585 fr. per ton, delivered. Beams are slightly improved, the export price being firm at £4 17s. to £4 17s. 6d. (\$23.51 to \$23.61) per ton. Angles, also, are more active at £5 3s. 6d. to £5 4s. (\$25.10 to \$25.22) for export and 570 to 575 fr. for domestic delivery.

Wire Rods.—Improvement is evident, with French and German sellers quoting on a higher basis of £5 14s. 6d. to £5 15c. (\$27.76 to \$27.78) per ton.

Sheets.—Depression is again in evidence in this market, with mills offering concessions to secure the small volume of business available. Heavy Thomas

sheets are quoted at £5 8s. to £5 9s. per ton (\$21.33 to \$21.58), f.o.b. Antwerp. Light Thomas sheets, 1 mm. thick, are held at £9 to £9 2s. 6d. (\$43.65 to \$44.25), and sheets of 0.5 mm. at £9 17s. 6d. to £10 2s. 6d. per ton (\$47.89 to \$49.10), f.o.b. Antwerp.

Metal Working Industries Active in Pennsylvania

HARRISBURG, PA., Dec. 22.—With the exception of the mining region, all parts of Pennsylvania are finding conditions in the iron and steel trade favorable, if one can accept as a criterion reports from employment offices of the Pennsylvania Department of Labor and Industry to the secretary, R. H. Lansburgh.

Scranton, the lone anthracite region office, finds that the iron and steel trades, like all other industries, have been greatly affected by the mine suspension. No shops are adding to their forces, while many men are without employment, or are working short hours. In the Pittsburgh area the demand is good for machinists, machine hands, toolmakers and open-hearth helpers. The improvement seems to be general in that district. While there appears to be no shortage of workers, there is no marked surplus of high-grade men.

Stove and brass foundries and machine shops in the Reading district are working full time with full forces. Iron and steel industries throughout the Harrisburg district are running full. Conditions in Johnstown are declared to be good. New car orders will keep the Bethlehem Steel Co. car shops busy for several months. Radiator works are reputed to be operating at full speed, with production still short of the demand. Virtually all metal and machinery industries are employing more workers than they did a year ago.

To Discuss Labor Union Cooperation in Railroad Management

A special meeting devoted to "Union Management Cooperation on the Railroad" is being planned by the Taylor Society for the evening of Feb. 5, the meeting to be held in the Engineering Societies Building, New York. The technical aspects of such cooperative management will be outlined in a paper by Otto S. Beyer, Jr., Washington, D. C., who took part in the work on the Baltimore & Ohio and the Canadian National Railways. Bert Jewell, president of the railroad employees department of the American Federation of Labor, will discuss labor's appraisal of the principles and results, and Sir Henry Thornton, president of the Canadian National Railways, will discuss the matter from the management's point of view. Daniel Willard, president of the Baltimore & Ohio Railroad, has been asked to preside.

Cooperating with the Taylor Society will be the management division of the American Society of Mechanical Engineers, the metropolitan section of that society, and the New York Railway Club.

Another specification in Portuguese has been issued under the auspices of the Department of Commerce. This one covers the specification of the American Society for Testing Materials on low carbon steel splice bars. The pamphlet is obtainable at 5 cents a copy from the Superintendent of Documents, Government Printing Office, Washington. Opposite each page of the Portuguese is the English equivalent.

Increase in November Exports

Largest Month Since August — Imports Heavy Also, Due to Large Pig Iron Movement

WASHINGTON, Dec. 22.—Aggregating 171,134 gross tons, exports of iron and steel in November of the current year were the largest since last August, when they amounted to 188,963 tons. The November foreign shipments were approximately 30,000 tons greater than those for October.

Imports of iron and steel in November of the present year amounted to 79,771 gross tons, or only 392 tons less than in October. For the 11 months of the current year imports aggregated 844,958 tons, against exports of 1,619,625 tons. The exports for the 11 months were 43,933 tons less than for the corresponding period of last year. In contrast to this, imports for the 11 months of 1925 showed the heavy gain of 357,632 tons over the corresponding period of last year, due principally to an increase of 207,126 tons in the incoming movement of pig iron. There were sharp increases, however, in imports of such products as ferromanganese, scrap, structural shapes and tubular products, cast iron pipe comprising the greater portion of the latter class.

The average monthly movement of exports for the 11 months ended with November was but 147,239 tons, or at the rate of 1,766,864 tons for the 12 months of 1925. The average monthly movement of imports was 76,814 tons, or at the rate of 921,772 tons for the calendar year.

The gain in exports in November, when compared with those for October, was reflected chiefly in steel bars, with a total of 10,973 tons in November, as against 8704 tons in October; semi-finished material, amounting to 15,236 tons in November, compared with 6845 tons in October; galvanized sheets, totaling 15,607 tons in November, against 9679 tons in October; black steel sheets, 11,281 tons in November, compared with 6999 tons in October; tin plate, 20,328 tons in November, compared with 14,712 tons in October, and the class under boiler tubes and welded pipe, 19,871 tons in November, compared with 14,239 tons in October. The increase in the latter class was due to the greater outgoing shipments of casing and oil line pipe, which showed a gain of 6500 tons over October. Welded pipe exports showed a decline in November.

Increase in semi-finished exports was due to the movement to Canada, which took 15,000 tons of skelp in November, against 6500 tons in October. The skelp movement to Canada almost completely absorbed our semi-finished exports. Of the steel bar exports in November, Canada took 6825 tons, against 5680 tons in October. The gain in exports of galvanized sheets was

Sources of American Imports of Iron Ore

(In Gross Tons)

	November		Eleven Months Ended November	
	1925	1924	1925	1924
Spain	6,231	6,274	144,401	63,010
Sweden	13,849	9,407	121,001	270,762
Canada	615	496	7,335	3,909
Cuba	58,500	27,868	472,630	270,081
Chile	159,100	152,300	971,900	1,043,275
All others	8,108	23,334	233,333	210,443
Total	246,403	219,679	1,950,600	1,861,480

Exports of Iron and Steel in Gross Tons

	All Iron and Steel	Pig Iron	Semi-Finished Material
*Average, 1912 to 1914...	2,406,218	221,582	145,720
*Average, 1915 to 1918...	5,295,333	438,462	1,468,020
*Average, 1919 to 1923...	3,078,724	123,837	149,218
January, 1924	247,942	3,812	8,594
February	164,820	4,773	11,463
March	123,618	4,047	2,278
April	131,276	4,117	8,275
May	154,136	4,317	4,895
June	163,770	2,057	11,178
Fiscal year 1924	2,009,343	40,596	119,744
July	137,451	1,796	10,363
August	134,628	4,365	6,127
September	135,979	4,799	15,475
October	157,071	3,373	15,569
November	123,577	1,478	8,649
December	128,865	2,549	7,081
Calendar year 1924	1,792,421	41,478	114,417
January, 1925	140,802	1,298	5,764
February	101,665	1,413	7,516
March	154,178	2,037	7,951
April	154,426	1,632	6,831
May	150,612	2,316	7,360
June	126,847	2,507	7,804
Fiscal year 1925	1,647,024	29,563	107,988
July	138,670	2,348	10,701
August	188,963	5,944	8,024
September	136,754	3,349	8,186
October	141,817	2,874	8,432
November	171,134	4,272	16,733
Eleven months	1,619,625	29,990	96,355

*Calendar years.

Imports of Iron and Steel in Gross Tons

(By Months and Monthly Averages)

	Total Imports	Pig Iron	Ferro-alloys	Ore and Oxide*	Manganese
January, 1924	26,675	10,587	3,033	23,081	
February	42,269	15,482	4,847	4,420	
March	39,278	16,919	3,941	46,067	
April	50,969	17,171	7,371	29,729	
May	66,801	25,220	5,501	31,993	
June	60,569	28,697	2,347	24,726	
July	30,410	13,511	1,435	12,287	
August	44,928	16,189	1,120	16,160	
September	45,214	16,347	3,578	6,269	
October	40,873	10,963	8,608	12,088	
November	35,707	9,880	7,596	19,919	
December	69,281	28,143	10,530	28,305	
Twelve months' average	46,370	17,426	4,992	21,672	
January, 1925	77,058	41,344	7,165	15,498	
February	92,373	47,803	10,997	9,666	
March	92,106	50,803	5,691	24,330	
April	71,249	33,299	7,699	14,941	
May	68,117	21,260	8,721	29,129	
June	82,330	35,657	4,259	20,720	
Twelve months' average	62,449	27,099	6,440	15,578	
January, 1925	64,642	24,881	3,601	28,586	
February	68,489	30,707	2,526	34,168	
March	63,445	29,917	3,594	22,709	
April	80,163	37,709	11,226	23,054	
May	79,771	34,712	6,173	33,238	
June	76,814	35,281	6,598	20,798	

*Not included in "total imports." These figures are for manganese contents of the ore.

Imports of Iron and Steel Products Into the United States During November, 1925, by Countries

(In Gross Tons)

	Country	Tons
Austria	34	
Belgium	10,287	33
Czechoslovakia	551	
Denmark	66	120
France	6,294	6,076
Germany	7,641	3,246
Greece	3	America
Italy	23	19,078
Netherlands	10,344	12,567
Norway	28	Ceylon
Spain	4	China
Sweden	2,322	Java and Madura
Switzerland	2	Hongkong
United Kingdom	10,474	Japan
Country	Tons	Kwangtung
Europe	48,073	50
Canada	9,598	Asia
		Total
		79,771

Imports of Iron and Steel Into the United States

	(In Gross Tons)		Eleven Months Ended November	
	1925	1924	1925	1924
Pig iron	34,712	9,880	388,092	180,966
*Ferromanganese	5,827	6,185	68,164	39,274
Ferrosilicon	346	1,411	4,412	10,106
Scrap	13,160	3,571	89,397	53,629
<i>Pig iron, ferroalloys and scrap</i>	<i>54,045</i>	<i>21,047</i>	<i>550,065</i>	<i>283,975</i>
Steel ingots, blooms, billets, slabs and steel bars [†]	2,405	2,881	25,448	36,393
Wire rods	955	556	7,333	6,237
<i>Semi-finished steel</i>	<i>3,360</i>	<i>3,437</i>	<i>32,781</i>	<i>42,630</i>
Rails and splice bars	1,359	2,474	36,627	39,599
Structural shapes	4,837	3,019	73,495	37,252
Boiler and other plates	152	1	794	3,254
Sheets and saw plates	213	39	3,208	2,452
Steel bars	5,771	.....	52,307	.....
Bar iron	757	371	10,910	4,077
Tubular products	7,895	4,706	71,064	51,462
Nails and screws	323	39	2,681	329
Tin plate	62	18	328	1,005
Bolts, nuts, rivets and washers	4	16	164	153
Round iron and steel wire	453	197	3,810	3,119
Flat wire and strip steel	169	130	1,969	1,971
Wire rope and insulated wire, all kinds	207	81	2,005	13,390
<i>Rolled and finished steels</i> [§]	<i>22,202</i>	<i>11,091</i>	<i>259,302</i>	<i>158,063</i>
Castings and forgings	164	132	2,810	2,658
Total	79,771	35,707	844,958	487,326
*Manganese ore	33,238	19,919	228,780	236,635
Iron ore	246,403	219,679	1,950,600	1,861,480
Magnesite	801	1,012	75,380	61,947

*Manganese content only; no shipments in November, 1925, from Cuba, free of duty and reported in gross tons when made.

[†]Steel bars have been separated from semi-finished products, in the Customs reports, only since Jan. 1, 1925.

[§]This includes some cast iron pipe, under the heading "tubular products."

due to the movement to India, which took 3586 tons in November, compared with only 45 tons in October. Heavier shipments of galvanized sheets in November were made also to Java and to the Dutch East Indies. Of casing and oil line pipe exports in November, Colombia took 400 tons, against none in October; Venezuela took 2061 tons, against 1051 tons, and the Dutch East Indies took 1464 tons, against 212 tons. Of the black steel sheet exports in November, Japan took 5706 tons, compared with 2092 tons in October. The marked increase in exports of tin plate in November over October was due to heavier shipments to India, China and Japan. India took 3475 tons of this product in November, against 512 tons in October; China took 5634 tons, against 1342 tons, and Japan took 5704 tons, compared with 4586 tons.

Canada, the leading destination of exports in November, taking 68,826 tons, more than quadrupled the quantity taken by the second largest country of export—Japan—which took 16,610 tons.

Pig iron easily was the greatest import item in November, incoming shipments amounting to 34,712 tons, of which 12,567 tons came from British India; 8991 tons from the Netherlands; 8325 tons from the United Kingdom, and 3550 tons from Germany, the remainder coming from Kwangtung, Canada, France, Belgium and Sweden. Total imports of pig iron for the 11 months ended with November reached the imposing figure of 388,092 tons. Imports of cast iron pipe in November totaled 4903 tons, of which 3852 tons came from France; 647 tons from Belgium and 404 tons from Canada.

India supplied the largest quantity from any single country in the import movement in November, shipments from that country having been 12,567 tons, while the United Kingdom, Netherlands and Belgium each supplied a little more than 10,000 tons. Imports from Canada amounted to 9598 tons.

Imports of iron ore in November totaled 246,403 tons, while imports of manganese ore in that month amounted to 33,238 tons.

Exports of Iron and Steel from the United States

	(In Gross Tons)		Eleven Months Ended November	
	1925	1924	1925	1924
Pig iron	4,272	1,478	29,990	38,934
Ferromanganese	173	20	4,323	3,165
Ferrosilicon	6	.....	765	.....
Scrap	6,352	2,555	78,866	91,676
<i>Pig iron, ferroalloys and scrap</i>	<i>10,797</i>	<i>4,059</i>	<i>113,179</i>	<i>134,540</i>
Ingots, blooms, billets sheet bar, skelp	15,236	7,560	77,031	90,291
Wire rods	1,547	1,089	19,324	17,045
<i>Semi-finished steel</i>	<i>16,783</i>	<i>8,649</i>	<i>96,355</i>	<i>107,336</i>
Steel bars	10,973	4,751	102,063	92,438
Alloy steel bars	42	366	3,124	2,557
Iron bars	232	322	4,353	4,840
Plates, iron and steel	10,983	4,094	94,510	80,277
Sheets, galvanized	15,607	11,062	147,857	99,982
Sheets, black steel	11,281	12,434	84,074	141,147
Sheets, black iron	1,254	1,179	12,918	9,977
Hoops, bands, strip steel	4,057	2,501	36,933	31,153
Tin plate, terne plate, etc	20,328	14,326	148,384	148,428
Structural shapes, plain material	12,247	8,283	94,699	94,822
Structural material fabricated	9,799	4,779	66,510	66,083
Steel rails	7,136	14,515	147,406	185,631
Rail fastenings, switches, frogs, etc	1,691	1,569	33,522	24,022
Boiler tubes, welded pipe and fittings	19,871	12,059	220,985	197,578
Plain wire	2,215	2,242	32,775	35,455
Barbed wire and woven wire fencing	5,889	7,413	65,244	83,886
Wire cloth and screening	161	85	1,658	1,553
Wire rope	413	194	4,062	3,334
Wire nails	1,114	873	8,892	20,803
All other nails and tacks	841	786	8,376	7,032
Horseshoes	31	56	623	919
Bolts, nuts, rivets and washers except track	1,261	1,268	15,483	16,347
<i>Rolled and finished steel</i>	<i>137,426</i>	<i>105,157</i>	<i>1,334,451</i>	<i>1,358,864</i>
Cast iron pipe and fittings	2,817	3,084	29,818	27,420
Car wheels and axles	1,449	1,697	18,826	20,574
Iron castings	450	483	9,591	7,862
Steel castings	125	282	3,956	5,449
Forgings	202	166	2,062	1,513
Castings and forgings	5,043	5,712	64,253	62,818
All other	1,085	.....	11,387	.....
Total	171,134	123,577	1,619,625	1,663,558

Simplification Proposed for Steel Sash—Study of Sheet Metal Ware Near Completion

WASHINGTON, Dec. 22.—Makers of steel sash have declared that considerable reductions are possible in the size and variety in that commodity and have asked the cooperation of the Division of Simplified Practice in developing a program of simplification.

A committee which is studying the existing variety in sheet metal ware with a view to preparation of simplified practice recommendations reports that it is nearly ready to submit a program to a general conference of all concerned. The division will call this meeting in January.

The division has also announced that the American Engineering Council is planning a five-year program of research, and has asked the division to have a part in the drafting of this program.

The output of manganese ore in the Chiaturi fields, in the Soviet Republic of Georgia, for September, broke all monthly records for the past ten years, according to a bulletin received by the Russian Information Bureau. Production for the month was 63,000 metric tons. It was the first month of operation under the Georgian Manganese Co., organized by the Harriman interests, which is working under a 20-year concession from the Soviet Government. The tonnage represents an increase of 86 per cent over August.

OIL-STEEL RIVER HAULS?

Plan for Return Movement of Oil in Vessels Which Carry Steel Down Mississippi

WASHINGTON, Dec. 22.—While lacking confirmation, a report which has aroused a great deal of interest and apparently has gained considerable credence indicates that new plans are under way for greatly increasing the water movement of iron and steel from Pittsburgh and other important producing centers which are accessible to waterways. Proposals, it is said, have been given consideration, if not actually brought to a conclusion, by which vessels used for shipping iron and steel down the Mississippi River would take on crude oil from the Southern fields and its refined products at intermediate points on their return to the North.

Under the suggested plans the water hauls, originating at or as near as possible to the tributaries of the Mississippi River, or through connections which reached it, would facilitate the shipment of steel to a wide market in the South or to Southern ports for export. Such a movement would be similar to the shipment of iron ore from the Lake Superior ranges to lower Lake Erie ports and the return haul of coal in the same vessels.

The proposed combination of steel and oil shipments has been the source of considerable discussion since the Interstate Commerce Commission permitted reduced rates to become effective on pig iron from southern Ohio furnaces to Louisville, Ky., and points in Indiana north of the Ohio River. The reduction was from \$3.38 to \$2.65 per gross ton. These tariffs were filed by the Chesapeake & Ohio and the Norfolk & Western railroads, and were bitterly protested by the Louisville & Nashville Railroad, while they were strongly supported by iron and steel and merchant blast furnace interests in southern Ohio, West Virginia and other points which will gain the advantage of the lower rate. The reduction is taken by some to indicate that competition by water lines is even now very sharp. In fact, there is evidence that low water rates have been made as an inducement to develop iron and steel traffic, a fact which gives added interest to the report of the proposed dovetailing of iron and steel and oil movements.

Pig Iron and Its Effects on Castings

"The Relation of Elements in Pig Iron and Their Resultant Effects on Castings" was the subject of a paper read by E. J. Lowry, metallurgist, Hickman, Williams & Co., Chicago, before the Quad-City Foundrymen's Association at the Rock Island Club, Rock Island, Ill., Dec. 14. Mr. Lowry illustrated his remarks with slides, showing how the various characteristics of pig iron are transmitted to the castings, and even in malleable iron survive the annealing process. Considerable discussion was brought out by Mr. Lowry's contention that good pig iron can be hurt by heating it past the critical point but that poor pig iron can be greatly bettered by the same process. There was an attendance of 80.

Refractory Service Survey at Power Plants

The service which a refractory will give in a furnace is fixed by the properties of the refractory itself and the conditions to which it is subjected. It is well known that the deterioration in service is greater than that which standard laboratory tests indicate and that the furnace temperature alone does not fix the length of life. Considerable laboratory investigation has been done on refractories, but there has been little coordinated study on the relationship of the refractory, fuel used and furnace conditions.

To attempt to remedy this and to obtain some measure of the relationship, a thorough study has been started by the Bureau of Mines of the Department of Commerce. A preliminary survey was made of a number of representative power plants in widely separated

The Louisville & Nashville Railroad in its protest to the commission before the new rates from southern Ohio furnaces became operative, pointed out that blast furnaces at Ashland, Ky., like those at Ironton, Ohio, are located on the banks of the Ohio River and that a large tonnage of pig iron is already moved to Louisville by barge, upon a reported rate of \$1.93 per ton of 2240 lb., including the cost of transportation from barge to car, at destination. An additional switching charge for delivery to consignee's plant at Louisville, amounting to \$13.05 per car, or 26c. per ton, is incurred, making the total charge by barge and transhipment to car, \$2.19 per gross ton.

Continuing, the Louisville & Nashville complaint said:

The loss of this traffic to the railroad company was a matter of serious concern and a study of the situation was made to develop the value to the shipper of the rail transportation versus that by barge, with the conclusion reached that the rail line could continue at least to share in this traffic on the basis of a rate of \$2.65 per ton of 2240 lb., or 46c. per ton in excess of the barge rate to Louisville and the switching rate thence to consignee, and that figure was accordingly published in the tariff referred to.

To establish the sufficiency of the rate of \$2.65 from southern Ohio furnaces to Louisville, as representing at least some profit to the carrier, the reply to the complaint in support of the tariffs pointed out that with the rail distance of 208 miles, the resulting revenue is 1.27c. per gross ton mile. Compared with this figure, it was stated, the rate of \$2.46 published by the Louisville & Nashville Railroad for substantially the same distance (216 miles), from Middleboro, Ky., to Louisville, yields revenue of 1.14c. per gross ton mile.

In a telegram to the commission upholding the rate of \$2.65, the Wheeling Steel Corporation said that the rate will not be relatively as low as the rate approved by the commission from Birmingham, and that traffic from Southern Ohio is now moving by the Ohio River. The Wheeling company also pointed out that it owns and operates private river equipment and modern river terminals at both ends which make the water movement attractive. However, the company added that it desired to give rail lines a share of the traffic "which cannot be done at present high rates."

locations, and using different fuels, and the data gathered coordinated and presented in a report to the co-operative committee, by C. F. Hirshfeld, Detroit. The first intensive study of a particular plant was made at that of the New York Edison Co., at Sherman Creek, N. Y. Due to other experimental work being conducted there, furnaces using both stokers and powdered coal were available, so that measurements of furnace operations under a variety of conditions were possible. Special furnace setting modifications were put in by the company and continuous records obtained.

Fewer Mechanical Stokers Sold

November sales of mechanical stokers, as reported by the Department of Commerce, represented the smallest total since August and, with that exception, the smallest since January. There were 76 units of 33,461 hp. reported sold by 13 establishments in November, compared with 114 units of 53,451 hp. in October and with 106 units of 37,167 hp. in November of last year. As has been the case for many months, the great bulk of the November sales was for installation under watertube boilers. The current figures may be compared with a total of 71,099 hp., last March, this having been the high mark of the last two years.

Proceedings of the National Association of Office Managers, covering the 1925 conference of June 11, 12 and 13 at Akron, Ohio, have been published in a 114-page paper-covered book which gives all the papers, together with discussions and other matters coming before the convention. This is priced at \$2 per copy and may be had from F. L. Rowland, secretary, care Lincoln National Life Insurance Co., Fort Wayne, Ind.

Testing Society's 1926 Meeting—The Marburg Lecture and Dudley Medal

The annual meeting of the American Society for Testing Materials will be held at the Chalfonte-Haddon-Hall, Atlantic City, N. J., June 21 to 25, 1926, according to an announcement made by the society's executive committee. This will be the twenty-ninth annual meeting. As to the 1927 meeting the executive committee has discussed the possibility of holding it at some other place than Atlantic City, and the society's committee on annual meetings, consisting of Dr. John A. Mathews, chairman, A. E. Jury, E. F. Kenney and K. G. Mackenzie, has been asked by the executive committee to study the situation.

In the 11 months ended with Nov. 30, 500 new members were elected. Of these 139 were secured through activities of the membership sub-committees. The total compares with 433 new members last year.

The plan of establishing the Edgar Marburg lecture and the Charles B. Dudley medal, which was authorized at the last annual meeting and discussed in *THE IRON AGE*, May 7, is being provided for by the executive committee. Confident that the members of the society will subscribe the required funds for these two purposes and having received the assurance of the president of the society that he will underwrite the expense of the 1926 lectureship, the executive committee has decided to have the first Edgar Marburg lecture delivered at the coming annual meeting in June, 1926. The president has appointed the following committee to select the lecturer: F. M. Farmer as chairman, George K. Burgess and G. S. Webster. Similarly it has been decided that the technical papers, accepted by the committee on papers and publications and presented at the annual meeting next June, will be reviewed for award of the Dudley medal at the 1927 annual meeting. The executive committee is engaged in the preparation of rules covering the award of the medal and the establishment of the lecture, and in due course will take up the important matter of a design for the medal.

Employment Declines Slightly in Metal Working Shops

Employment in 841 shops reporting to the National Metal Trades Association, Chicago, showed a slight decline in November to 636,151 from 637,160 in October. The number employed in November, however, was considerably larger than in any preceding month since June outside of October. In June the total number of employees reported was 519,997, in July 588,782, in August 597,376, in September 617,768. The plants reporting to the association are located in New England, New York, Pennsylvania, Ohio, Indiana, Michigan, Wisconsin, Illinois, Iowa and Missouri.

Written Notice Prerequisite to Assessing Demurrage

WASHINGTON, Dec. 22.—Railroads must give written notice to shippers before they may assess charges under the tariff rules for detention of cars. This, in effect, is the decision of the Interstate Commerce Commission in upholding the complaint of the Central West Coal & Lumber Co., that charges assessed for detention of four shipments of lumber at Alliance, Neb., were illegal. Reparation was awarded.

The shipments were made in June, 1921, from Enumclaw, Wash., and upon their arrival at Alliance, the usual post card notices were sent by the Chicago, Burlington & Quincy Railroad, which had jurisdiction over the point of origin, but the complainant had no office at Alliance and the notice was returned to the Burlington office at Seattle, which is said to have telephoned an agent of the complainant in that city. The latter denied any recollection of receiving the notice. Therefore it was contended that the Burlington did not comply with the tariff.

"The tariffs laid upon defendants the duty of send-

ing notice by wire either to the consignor or to the agent at point of shipment, failing in which no demurrage accrued after the lapse of five days from the first 7.30 a. m. after the day on which notice of arrival was sent or given to the consignee," said the decision.

Luxemburg Export Company

A limited company with a capital of 3,000,000 francs, has been formed for the export sale of the products of a group of important steel works located in France, in Luxemburg and in the Saar Valley. The Société Générale pour le Commerce de Produits Industriels has its main office in the city of Luxemburg. The group of companies thus brought together for export sales has a large steel producing capacity. The combined plants include 44 blast furnaces, 20 basic and three acid Bessemer converters, 41 open-hearth furnaces, 6 crucible melting furnaces and 13 electric furnaces.

In a 12-page pamphlet the works covered are briefly described. The products include iron and manganese ore, ferroalloys and the various classes of pig iron, also semi-finished steel, and bars and rolled material of all sections and qualities, wire, sheets and plates, tin plates, rails and accessories, tool, spring, magnet and special steels, tubes, etc.

Program for the Steel Treaters' Winter Sectional Meeting

For the technical program at the winter sectional meeting of the American Society for Steel Treating, to be held at the Hotel Statler, Buffalo, Jan. 21 and 22, the following papers are expected to be presented:

"Testing of Automobile Sheet Steel," by Dr. G. L. Kelley of the Edward G. Budd Mfg. Co., Philadelphia; "The Laboratory as a Factor in the Inspection of Alloy and Tool Steels," by W. H. Wills, Jr., metallurgist Atlas Alloy Steel Corporation, Dunkirk, N. Y., a report supplementing work relating to the "Effect of Size and Shape on the Hardening of Steels," by H. J. French and O. Z. Klopsch, Bureau of Standards; "Electric Steel Melting from the Metallurgist's Viewpoint," by Dr. Birger Egeberg, Halcomb Steel Co.; "On the Nature of Alloys of Iron and Chromium," by E. C. Bain, Union Carbide and Carbon Research Laboratories; "Influence of Changes in Carbide Concentration on X-Ray Structure of Some Pure Iron-Carbon Alloys," by Dr. W. L. Fink, Aluminum Co. of America.

One technical session will be held Thursday morning, Jan. 21, and the other two on the following day. The afternoon of Thursday, and part of Friday, will be devoted to plant inspections. A banquet is scheduled for Thursday at 6.30 p. m. On the day preceding the meeting there will be held what is termed an "early bird's dinner" to which all members of the society are invited. All of the members of the Buffalo chapter will attend this, together with those who have arrived from out of town. After dinner the party will attend a theater.

The Thompson Wire Co., Mattapan, Mass., has started operations at its new works, 115 Stafford Street, Worcester, Mass., producing fine tempered high carbon round steel wires. The Mattapan plant, which is being enlarged, confines its output to cold-rolled strip steel. The Worcester plant is a distinct department. A large factory building has been remodeled to house the wire drawing and a new one-story brick structure 60 by 115 ft. is devoted to heat treating processes. The local manager is Giles S. Pease and the superintendent Alfred P. Lundquist, both of whom were for many years with the Spencer Wire Co. and its successor the Wickwire Spencer Steel Co. The Thompson Wire Co. was established several years ago by George M. Thompson after his resignation as general manager of the Wickwire Spencer company.

Steel Output Likely to Increase: Barometers Suggest No Price Change

P/V Line Indicates Expansion and Trend of Unfilled Orders; Also Forecasts Larger Production. Consuming Industries Should Take More Steel in Near Future

BY DR. LEWIS H. HANEY
Director, New York University Bureau of Business Research

Favorable Factors

1. The P/V Line rose again in November.
2. Unfilled steel orders again increased more than usual for the season.
3. Building permits and contracts unusually large.
4. New enterprises gained sharply.
5. Bank debits increased.

Unfavorable Factors

1. Expansion of retail trade checked in November.
2. Employment and earnings of labor failed to make full seasonal gain.
3. Exports are low in comparison with imports.
4. Business failures increased more than usual.

THE indications given by November data are quite mixed and suggest a period of temporary irregularity in business. The most barometric indexes, however, indicate renewed expansion in the early part of next year. Business appears to have entered a short period of irregularity and readjustment, but should resume its moderate upturn within three or four months.

The adjusted index of railroad tonnage, which is one of the best indexes of the business cycle, continued its gently sagging trend in November, even after making allowance for the usual decline in that month. While the number of cars loaded with freight has held up well considering the season, the size of the average carload has fallen to a low level. The average net tons per car were only 26.3 in October.

The picture presented by the railroad tonnage curve is one of remarkable stability. The deviations from the average for the year have been small and no such peak has occurred as was reached in 1923.

Speculative Influence Still Large

IN contrast with railway tonnage the volume of bank debits in November broke into new high territory and clearly shows that the volume of speculative transactions which are not reflected in shipments of goods is extraordinarily large—perhaps dangerously so. Some allowance doubtless must be made for a higher average

of commodity prices. But the fact remains that trading, as distinguished from industry, shows a relatively large expansion. In part this expansion reflects the current large volume of wholesale and retail trade and to this extent it is favorable to increased business. To the extent, however, that it represents speculation in stocks, real estate and commodities, it is a dangerous signal.

In view of the considerable firmness in commodity markets it does not seem probable that we will see a real business recession, or cyclical downswing, until the railroad tonnage curve has reached or exceeded the 1923 peak. So moderate an expansion as has yet occurred is not sufficient to threaten industrial stability.

P/V Line Again Rises

THE P/V Line, which we regard as the best single barometer of the general trend of industry, rose in November which is the second successive month of the renewed upward trend. It is now at the highest point since the end of 1922. The most significant conclusion, however, is that the changes in the P/V Line have for several months been relatively slight, which indicates a very stable condition of business and industry. The period of lull and readjustment which was forecast by the very minor downturn of the barometer in August and September is now on and will probably carry

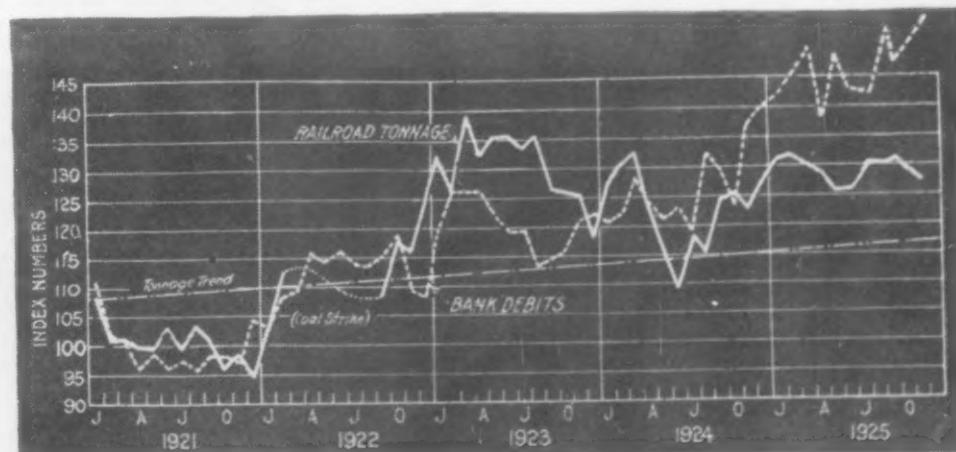


Fig. 1—The Downward Trend of Railroad Tonnage Is in Marked Contrast With the Volume of Bank Debts, Indicating an Unusual Amount of Speculation

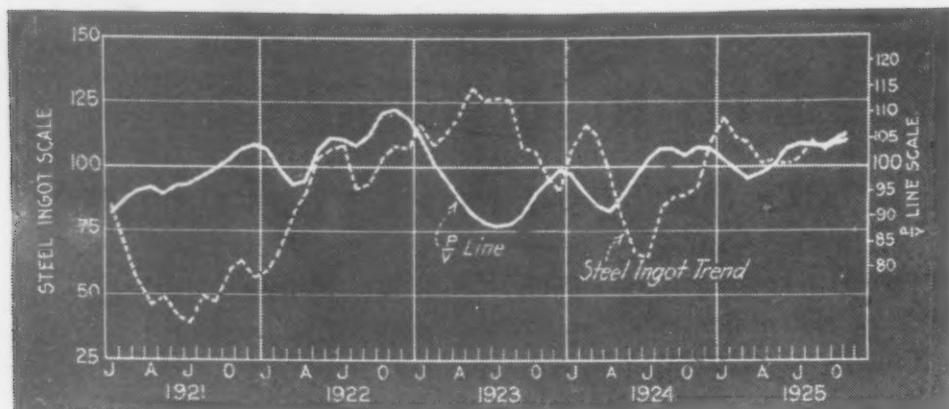


Fig. 2—The P/V Line Continues to Rise and Indicates That Commodity Demand and Supply Are Well Balanced

through January. This period should be followed by recovery.

The position of the P/V Line indicates that on the average the commodity demand and supply are well balanced and that the outlook for business is good during a period at least four or five months from the present time.

As usual the output of steel ingots, as adjusted to eliminate the small seasonal variations which affect it from month to month, is closely following the P/V Line. In November the ingot output rose a little above the barometer line, and, as has been the case at recent year-end periods, it will probably rise still further. The P/V Line indicates further expansion of steel production, but suggests that it will be moderate.

Steel Barometers Indicate Improvement

THE rate of change in unfilled steel orders continued upward in November, though less sharply than in October. There was a gain in unfilled orders and it was larger than in the preceding month, but not so much larger as were the gains in the two preceding month, but not so much larger as were the gains in the two preceding months; the percentage of gain was smaller than in September or October. While there is no present indication that unfilled orders will reach as high a point as they attained a year ago, or in 1922, the trend this fall is, nevertheless, very significant. *It appears unquestionable that the buying of steel is still largely for current requirements and that under the circumstances a lower level of unfilled orders is normal. Accordingly, so sharp a gain as has occurred in recent months is notable.*

That scrap steel has failed to respond to the rise in unfilled orders is also notable. Usually the rate of change in unfilled orders (as shown in Fig. 3) is followed rather closely by the price of scrap. Recently, however, scrap prices have shown little more than a condition of irregular stability. The question naturally arises, is scrap losing its value as a barometer? Temporarily this appears to be true to some extent. The limited advance in the price of steel and the continued ease in the market for pig iron readily explain this fact.

The net conclusion to be drawn from the steel

barometers this month is that the trend of unfilled orders forecasts expansion in production, but not proportional gains in steel prices; while the steel scrap barometer indicates that prices are likely to advance but little in the near future.

Consuming Requirements Should Increase

FOR the first time in several months we present in this issue indexes which show the trend of three important steel-consuming industries—automobile, oil, and mining (see Fig. 4).

Automobile production, after its severe slump in August, when the Ford output was temporarily curtailed, reached a new peak for all time in October. In November, however, the production of passenger cars and trucks declined moderately, falling from 406,572 in October to 336,358. The total for 11 months is 3,532,440 which compares with 3,080,665 for the same period in 1924.

While the November figure is the highest on record for the month it represents a sharper decline from October than usual.

It is noteworthy that the trend of automobile production on the whole appears to have been decidedly upward throughout 1925 and a glance at Fig. 4 will show that October and November this year are the only months since the middle of 1922 in which the automobile curve has risen above both the petroleum and mining curves.

The index of the petroleum industry represents both the monthly production of crude oil and activity in drilling oil wells. As it is adjusted for seasonal variation it shows the real trend of activity in the oil producing industry, reflecting the potential requirements for storage tank material, pipe, casing, tools, etc. Thus measured, the curve of activity in the petroleum industry has fallen off steadily since June, and October was down to practically the same level which existed in February. There is thus no indication of any increase in the demand for steel from the oil industry during the next few months.

Mining Activity Low

MINING activity is at practically the lowest point since the middle of 1924, doubtless largely due to the anthracite situation. The expansion of production

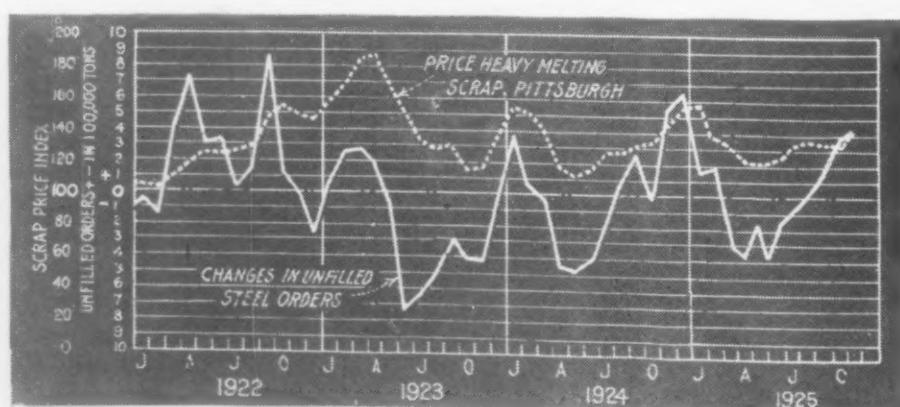


Fig. 3—Steel Scrap Having Failed to Respond to the Rise in Unfilled Orders, Some Question Has Arisen as to Its Barometric Value

In This Issue

Buying of steel still largely for current requirements.—Consequently the upward trend of unfilled orders forecasts larger output, but not necessarily proportional gains in prices.—Page 1756.

Modification of quarterly contracts for steel by placing successive monthly orders becoming more general.—Habit of considering \$2 a ton as an indivisible unit of price change prevents wider acceptance of monthly allotment of orders.—Page 1760.

November exports of iron and steel largest since January, 1924.—Almost double those of a year ago: imports also heavy, due to incoming pig iron.—Page 1751.

Sheet manufacturers' unfilled orders gained 40,000 tons last month.—And production of sheets in November was 100,000 tons above the output one year ago.—Page 1734.

November sheet production represents 107.8 per cent of estimated capacity.—Yet since prices show no evidences of capacity output, the question arises: Is rating of manufacturers in need of revision?—Page 1760.

More metal being used in production of toys each year.—Modern plaything has a price limit 50 times as great as that of 20 years ago; children use playthings until they are 15 instead of 10 years old and toys are now made stronger for outdoor use.—Page 1727.

Five cents out of every government dollar are spent for development of trade and industry.—As compared with about 20 cents spent on War and Navy departments.—Page 1729.

Ocean-going fleet of Steel Corporation protects its foreign markets.—And government-owned merchant marine would do the same for other lines of export if permitted to do so, says Chairman of Shipping Board. Page 1763.

Average operating expenses for 52 machinery equipment firms were 21.13 per cent.—Direct selling 5.30 per cent; warehouse 3.15 per cent; administrative 9.97 per cent; profit 0.56 per cent.—Page 1733.

Failure of open-hearth refractories may be prevented by tests in advance.—Engineer suggests workable limits for modulus of rupture, specific gravity and chemical analysis.—Page 1735.

Power necessary to roll various bloom or billet sections can be foretold.—Charts make determination of necessary power easy to ascertain.—Page 1739.

Steel castings sales in November largest since January.—Steel foundries operating at about 70 per cent of capacity.—Page 1745.

Vickers, Ltd., writes down value of assets £12,500,000.—And reduces ordinary capital more than one-half to settle post-war depression losses.—Page 1749.

Only blast furnace in country making ferrophosphorus is at Rockdale, Tenn.—Lower portion of furnace specially constructed to prevent escape of phosphorus.—Page 1731.

Tantalum is replacing platinum as engineering metal in electrolytic processes.—Costs one-twentieth, lasts 1600 times as long, says Prof. James R. Withrow.—Page 1730.

Japanese buying of our steel has dropped off 50 per cent this year.—From the volume maintained in the five preceding years; possible resentment at Japanese Exclusion Act may be cause.—Page 1761.

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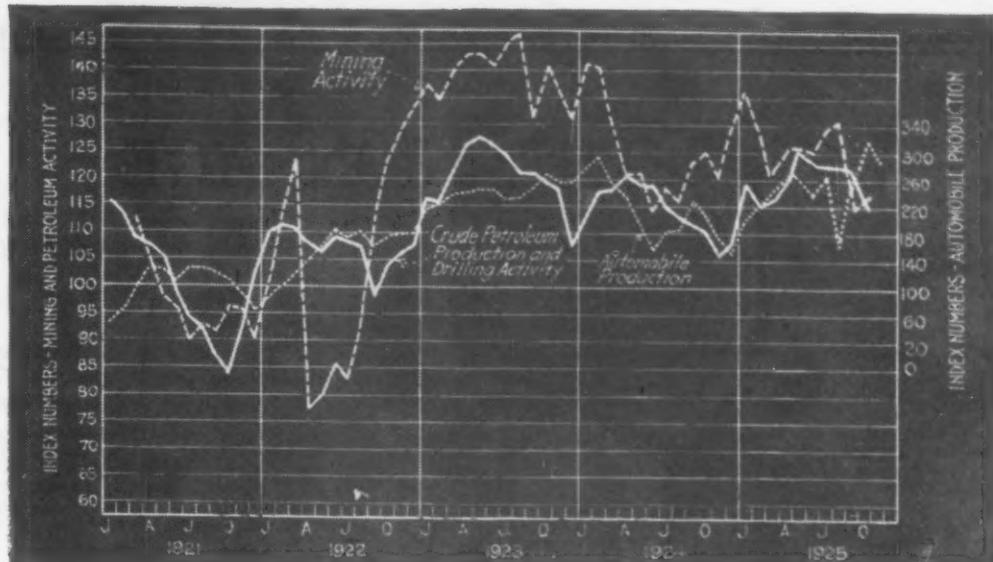
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Displacement of Metal in Rolling

CAREFUL study of the displacement of metal in the rolling mill operation, together with a consideration of the power requirements for doing the work, are along the line of progress to better mill practice. Results of such a study, made with both motor-driven and steam-driven mills as subjects, appear on page 1739 *et seq.* in this issue. The author has presented his facts in a manner calculated to command the attention of those charged with responsibility in blooming mill work, in particular, and in smaller rolling mill problems, in general.

For News Summary See Reverse Side

Fig. 4—Activity in Consuming Industries Shows Clearly That Demand for Steel Should Continue at High Levels for Some Months



in the bituminous coal fields may be expected to cause further gains in this index, but the demand for steel in the mining industries does not promise to be very large for some time.

The net result is that the total steel requirements of the three industries in the near future should be greater than a year ago but have recently tended to decrease slightly. Automobile production in the spring will probably be heavy but sharp competition and price

cutting are in prospect which will reduce the profits of a good many companies and ultimately curtail output. The trend of activity in the oil industry is clearly downward. This is a good thing for the industry itself even if it does temporarily cut down the steel demand. Activity in mining industries is held up by bituminous coal, but on the whole has worked lower during the last two years, due perhaps, to increased output in European countries.

The Iron Age, December 24, 1925

JAPAN BUYS IN EUROPE

Trial Orders of Belgian Sheets—China Asks for Rails—Americans Importing

NEW YORK, Dec. 22.—Although there is a fair volume of inquiry in the market from Japanese sources, much of this business is expected by exporters to go to European makers. Chinese inquiry is light, the present warfare having interfered with the shipment of certain products into the interior, so that a fairly sizable tonnage of wire shorts, for instance, is reported to have accumulated in coast ports, such as Shanghai, Hankow and Hong Kong. There is an inquiry in the market for rails for use in China, which specifies 3000 to 5000 tons of 60-lb. or heavier relaying sections with accessories. As the present American quotation on relaying rails for export would bring the delivered price close to \$40 per ton, while new Thomas steel rails and accessories from a Continental mill would probably be \$5 or more under this price, exporters evince but little interest in the inquiry as prospective business.

The inroads of European steel in Japan continue noticeable. It is reported that recently two trial orders for black sheets, 13 sheets to the bundle, were placed with a Belgian mill at about \$78 per ton, c.i.f. Japan. The sheets furnished will be open-hearth and one-pass cold rolled. An inquiry for about 500 tons of light gage black sheets that was recently circulated in the American market with an offer to pay \$82.50 per ton, c.i.f. Japan, is reported to have been placed with the Bowesfield Steel Co., Ltd., in England, maker of William Tell brand sheets. The second purchase by Tokio of 3 miles of 91-lb. high T-rails went to Mitsui & Co. and was placed with a Continental mill. The 253,000 ft. of pipe for the Toho Gas Co. has been placed with the leading American maker.

Among current inquiries from Japan, several of which will probably go to European makers is a call for bids from the South Manchuria Railway Co. for 50 miles of 100-lb. rails and another rail inquiry, 32 miles of 91-lb. high T-rails for the Hanshing-Kokudo Electric Tramway. The Nakano Oil Co. inquiry for 86,000 ft. of oil well casing is also expected to go to Europe. A sizable tin plate inquiry is in the market from Formosa, where an alcohol company is asking for about

3000 base boxes of oil can plate, c.i.f. Ki Lung or Takow.

American importers are not only quoting on a large volume of steel products including billets, forging bars, rails, reinforcing bars and plain steel bars, but a moderate volume of actual business is being placed for delivery from European makers. One importer representing a German maker reports the sale of a total of 3000 tons of Thomas steel reinforcing bars to two different customers in the South and about 500 tons to another purchaser.

To Experiment on Cutting Up Ford Ships

Supplementing the recent announcement in THE IRON AGE that the Ford Motor Co. would tow about 100 of its recently purchased Shipping Board vessels to Detroit for scrapping, the first of these boats, the Fond du Lac, arrived at the Rouge plant of the Ford company, Thursday, Dec. 17. It was towed to the River Rouge docks by the tug Bellcamp, which brought it up the coast and the St. Lawrence and Detroit rivers. The ship left the coast about the middle of November and was delayed somewhat in its arrival by ice in the upper St. Lawrence River. The Ford engineers will thoroughly inspect this vessel and determine in the near future the method to be employed in scrapping all these ships.

The boat will be dismantled and its boilers, pumps and other usable equipment salvaged. The remainder of the vessel will be scrapped. Experimental work will be conducted with cutting torches during the winter in cutting up this boat with a view to determining the best method of scrapping the remaining boats.

Socket wrenches of chrome-vanadium steel and in three styles, offset, Tee-handle and brace, have been added to the line of the Bonney Forge & Tool Works, Allentown, Pa. The socket and shank of these tools are forged from one piece and a feature of the brace type wrenches is the ball-bearing handle. The use of the chrome-vanadium steel is stressed as providing strength and lightness, and the thin walls made possible for the sockets is an advantage in cases where the nut or bolt is in a close corner.

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Sliding Scale Prices for Steel

IN various lines of industry there is more or less in vogue a practice of invoicing goods according to the current market price. When a monthly average is struck and a month's shipments are invoiced at that specific figure there is the well known "sliding scale" arrangement. The steel trade has followed the practice to only a very limited extent, yet the question well may be asked whether this or some similar system might not be found worth while.

That the steel trade, including buyers and sellers alike, would prefer prices to be more stable is quite well known. Definite statements to this effect have been made, and the advantage of steady prices is, in the abstract, fully recognized.

Generally speaking, only the speculator desires fluctuating prices. In the past steel buyers have appeared at times to be speculating in their purchases, but the apparent speculation may have been more a protection against a sharp rise.

To attempt to introduce in finished steel products a rigid system whereby invoice prices should be determined monthly by any arbitrary rule would probably be hazardous. There would be room for quibbling as to the authenticity of the price or average. The dependence of buyer and seller each upon the other is so great that there is a desire to agree, and monthly consideration of a price to govern a month's shipments would give rise to no friction in most cases. Some such style arose in the semi-finished steel trade more than 20 years ago, the essence of the arrangement being that the seller undertook to supply the buyer's requirements, price to be named by the seller month by month or quarter by quarter, the buyer having the option to refrain from taking material during the period if the price does not suit him.

That precise system would not apply so well in finished steel products for the reason that the customer's ability to consume is not so clearly defined as is the case in a rolling mill using semi-finished steel; but there are devices to define what is meant by requirements. A specific tonnage

may be named in the contract, or the buyer may be limited to a certain percentage increase over his largest month in the past.

As a matter of fact the spirit of this monthly service principle has unostentatiously come to prevail in much of the steel business now done. There is placing of successive orders instead of the old style of making quarterly contracts at one time and determining at quite other times what tonnage shall actually be furnished under the contracts.

The present tendency of this practice is to grow. Modification of one of the trade's habits would encourage a more rapid spread, the habit of considering \$2 a ton an indivisible unit. Buyers and sellers should not be too big minded to consider smaller amounts—\$1 a ton, 50 cents a ton. If the price advances by 50 cents a ton each month for six months the seller gets something very substantial, and if a market is not capable of advancing for as long as six months it may well be asked whether it has a right to advance at all.

IN the November sheet statistics of the National Association of Sheet and Tin Plate Manufacturers the production of the manufacturers reporting is given as 336,021 net tons and this total is rated as 107.8 per cent of capacity. The association's percentage reckoning is derived from the number of turns possible in the working days of a given month, and the basis of the calculation of production is 7.65 net tons per turn for sheet mills and 22.635 net tons per turn for jobbing mills. The question is naturally raised whether the basis of the tonnage calculation for the reporting sheet mills is not too low. It is not urged that the figure taken as 100 per cent, or "practical capacity," may not be exceeded in times of exceptional demand upon the industry. But the point is that when 100 is passed that fact should advertise the situation as in a high degree prosperous. It is true that the demand for sheets has been for some time above the average for the leading forms of finished steel; but when prices are considered there is no suggestion that the capacity

of the mills is being put to the test. Rather, the conclusion to be drawn from the statistics cited is that the basis of the percentage rating of the sheet manufacturers might well stand an upward revision.

Steel Exports Smaller in 1925*

A NEW low record for recent years will be made by American steel exports in 1925. Judged by the returns for the first eleven months and estimating those for December, the total this year will approximate 1,700,000 gross tons of pig iron, rolled material and castings, scrap being disregarded. This is 3 per cent under the 1,750,000 tons of 1924. Comparative data in gross tons per month make this showing:

	Monthly Average
1925.....	142,000*
1924.....	145,900
1923.....	162,100
1922.....	161,500
1921.....	181,300
1920.....	392,400
1913.....	242,300

*Partly estimated.

The decline since 1920 has been progressive, until for 1925 we have a loss of 62 per cent from the 1920 and of 41 per cent from the pre-war or 1913 volume. While our sales to foreign consumers have been falling off, those of France, Germany, Belgium and even England have been expanding, or at least holding their own.

High labor and transportation costs are not the full explanation. A sharp decline in Japanese buying is a large factor. Taking six representative finished steel products—steel plates, rails, black sheets, tin plate, plain and galvanized wire and galvanized sheets—in the six years since the war American producers have sold to Japan 2,080,700 gross tons out of the 7,814,800 tons exported, or 26.6 per cent. Of the same six products, only 11.7 per cent of our exports has been taken by Japan during the first ten months of this year. Japanese buying, therefore, has fallen off over 50 per cent this year from the volume maintained from 1919 to 1924, inclusive.

Reduced needs of Japanese consumers is not the cause. There is ground for the belief that buyers there have not forgotten the rough-shod riding of Congress over the protests of Japan and of hundreds of thousands of our own citizens in the passage of the Japanese Exclusion Act last year. There will be official denials of any concerted movement of retaliation, just as were made by the Imperial Railways in the recent issue over American rails. But the fact remains that Japanese steel orders to the United States have fallen off and that there is more response to the assiduous cultivation of Japan by European makers of steel.

FORCED since the war to obtain iron ore supplies from new sources, Germany has had to change radically her steel-making processes. Up to Sept. 1, Germany had imported this year 8,781,300 tons of iron ore, of which over 5,618,900 tons, or 64 per cent, came from Sweden. Spain contributed 12.7 per cent. Before the war nearly

75 per cent of the ore supply for German blast furnaces came from Alsace-Lorraine. From that source has come this year less than 4.5 per cent of the total. The ores used before the war required the basic Bessemer process in steel making because of their high phosphorus content. The production of pig iron today from Swedish and Spanish ores renders much of such equipment obsolete. Open-hearth furnaces are gradually replacing Bessemer converters, and recent steel statistics show that about 54 per cent of the output is now basic open-hearth steel, as against 38.5 per cent in 1913. This gap promises to widen rather than contract in the near future.

Selling Automobiles on Time

SEEING that the automobile trade is one of the steel industry's largest customers and the steel industry does practically a cash business while automobiles have come to be sold chiefly on installments, the steel trade has an important and very practical interest in the drift of things.

The prediction that the coming year is going to be one of very sharp competition in the automobile trade is not new. We have been hearing something of that sort for years past, but the failure of such warnings never proves that they will always be wrong.

It is not many years ago that cash sales of automobiles were the rule. The iron and steel industry, at long range, has had a change in the opposite direction. There was a time, still within the memory of some in the trade, when rolled iron products were sold for paper, and renewal of part of the old note, on the occasion of a fresh purchase, was common. It is one of the good things about the steel industry that it now does practically a cash business.

Considering only the circumstances of manufacture, the automobile industry would not be expected to grant more time in sales than the steel industry. The ratio of annual turnover to capital investment is much higher in automobiles than in steel. In the latter the overhead is a much larger proportion of the cost of production. Generally speaking, it is in cases where the overhead is high that time sales are the more natural.

On the other hand, considering the circumstances of selling, the automobile is naturally sold on time, for most purchasers are individuals who have no capital, while steel goes to buyers who have capital.

Generally in the sale of goods there are three elements of competition—quality, service and price. Competition is healthy for trade, but of the three forms competition in quality and competition in service are by far the more healthy. It is not the automobile trade alone that has a fourth form of competition, in terms of payment, but the automobile trade lately has become conspicuous in this direction. While price competition is plainly less healthy than competition in quality and competition in service, competition in terms is still less healthy than competition in price.

The high ratio of annual turnover to capital investment in the automobile trade has been the safeguard against unwholesome price competition.

A few years ago there were shallow predictions of a "price war" coming in automobiles, followed by vigorous denials on the part of representative makers. The denials were unnecessary. Anyone making the comparison between investment and turnover would see that a maker who sold at only a few per cent less than cost, not enough to promote sales materially, would soon have his capital impaired.

Thus there has been a safeguard against price competition such as would be destructive. The destruction would be too prompt for any chances to be taken with it. Reflection that there is no corresponding safeguard against competition in terms of sale shows how easily the practice may be carried dangerously far.

Bad conditions in the automobile trade would reflect seriously upon the steel trade. The proportion of the steel industry's output that goes into automobiles is commonly overrated by those who do not seek the actual facts, such, for instance, as are presented in the annual summary of THE IRON AGE as to "where steel goes."

Accidents Outside of Industry

ONE after another American cities are starting intensive movements to decrease accident hazard. The work centers in local safety councils and has the active cooperation of the National Safety Council. Some cities have extended their activities into outlying towns. Manufacturing companies and business houses are forwarding the movement. Experience has proved already that the accident rate can be much reduced.

The prime incentive of the manufacturer in entering into this activity is, of course, civic duty. At the same time he recognizes that personally he will be a gainer if his employees are safer outside of as well as in industry. He has a particular interest in the traffic problem, for the motor truck has added another industrial hazard. Most plants maintain trucks; some of them have whole fleets. The commercial motor vehicle, it has been demonstrated, constitutes a very considerable hazard. One survey showed that while trucks were only 8 per cent of the total of motor vehicles operating in a city, they caused 51 per cent of the motor vehicle accidents. Truck drivers were injured, and truck drivers were responsible for injuries to others. Employers or their insurance companies were made liable for damages. But the expense is not the most serious side of it. No owner cares to hear that his men and his trucks are responsible for death or suffering. And there is great and costly annoyance in the necessity of extricating employees from trouble which their carelessness or recklessness has brought upon them.

Surveys and Government statistics agree that an employee of a manufacturing firm is safer while at his work than when he is out of the plant. In some instances the ratio in favor of the plant has been shown to be extraordinarily high. So far as maintaining a working force with a minimum of lost time and resulting disorganization, it makes no difference whether a man or woman is injured at work, or on the street or in the

home. Moreover, an accident to a member of his family is demoralizing to the worker. He may remain away from his task, or, if he stays on the job, a worried man is often less efficient.

Therefore, if the accident rate of a community can be lowered, as it seems to have been in every city where the test has been made by a safety council, then the business house must profit directly and indirectly. The National Safety Council has evolved a technique for conducting the municipal safety campaign, and has field representatives to demonstrate it. Trained managers conduct the work. The effort is to educate the public in divers ways which have been found effective, and then to keep at it without let-up. Cities which have been through the experience have records to prove that they are much safer places to do business in than they used to be.

INTENSIFIED output, coincident with installing improved tools to increase the production rate, is often required of plant managers. The problem is well solved by one large works which, during the past five years, has replaced about half of its machine tools. The changes have been speeded up this year and the program of replacement has included individual electric drive on some of the older units retained. Because of demands upon the machinery already in place, only a single unit is changed over at a time, although a whole battery of replacement machines may be delivered or on the way. An installing force is kept going steadily, week in and week out. This involves a minimum interruption to plant operation, while insuring a steady improvement in ability to turn out product in the quantities demanded.

Fabricated Steel Plate Bookings Continue Moderate

WASHINGTON, Dec. 22.—Fabricated steel bookings in November totaled 28,557 tons, according to the Department of Commerce, whose estimate is based on reports from 36 firms. The November bookings were 42 per cent of capacity as against the revised figure of 28,338 tons or 41 per cent of capacity for October. Of the November bookings, 7492 tons was for oil storage tanks; 2544 tons for refinery materials and equipment; 3890 tons for tank cars; 4559 tons for gas holders; 581 tons for blast furnaces and 9491 tons for stacks and miscellaneous purposes. For the 11 months ended with November of the current year fabricated steel bookings amounted to 295,158 tons, against 263,550 tons for the corresponding period of 1924 and 516,509 tons in 1923.

November Enameling Business Better

Business in November, according to reports of 80 enameling companies was better than in October. October returns showed the enameling industry operating at 84 per cent of capacity and November reports show operations at 86 per cent. Of 315 furnaces 272 were operating.

R. A. Weaver, president Ferro Enamel Supply Co., Cleveland, says that the return cards from the companies contained such remarks as "Business in New England good," "Every furnace working 24 hr. per day," "Running full time and overtime," and "Three day gangs—two night gangs."

American Merchant Marine Needed

Head of Shipping Board Favors Sale of Government Vessels, but Says Private Ownership Must Have Support of Exporters—Cites Policy of Steel Corporation

NEW YORK, Dec. 22.—Replying to a criticism by the American Manufacturers' Export Association that the Government operation of ocean vessels "appears to be inadequate and interferes with the acquisition and operation of shipping by private capital," and suggesting that as soon as practicable existing steamship services be turned over to private enterprise, Chairman O'Connor of the Shipping Board delivered an interesting address before the association here on Wednesday of last week.

In the course of his remarks he spoke of the percentage of steel exported in American and foreign bottoms and also pointed out that it required policies like those of the United States Steel Corporation and the Standard Oil Co. to build up a privately owned American merchant marine. Mr. O'Connor told the association that the Shipping Board has sold a great many ships, is trying to sell more, and inquired of the organization if any of its members wanted to buy or if it knew of anybody else who wanted to buy. He declared that since 1921 the board has sold more than 1300 ships, 800 of which are sailing the oceans under the American flag. It was pointed out by Mr. O'Connor that the Shipping Board is not in competition with any American in the shipping business "unless that American owns stock in a foreign company."

"If we sell a line to an American citizen we certainly do not interfere with his progress, because on the line which he buys he has for a period of years a practical monopoly so far as American flag ships are concerned," he declared.

American ships, according to Mr. O'Connor, must be given support by exporters before private ownership will be adequately encouraged. He explained that in 1924 American ships carried between Atlantic ports and ports of the United Kingdom and continental Europe 24 per cent of the export and import dry cargo. In the first six months of 1925, it was said, American ships carried 21 per cent of the same kind of cargo, losing 12½ per cent of what they had.

"At this rate our retreat will be a rout," said Mr. O'Connor, "and in less than eight years the American fleet will not be seen in these great channels of commerce. In many ways north Atlantic shipping is the queen of the business, because America, the United Kingdom and continental Europe, are producers and consumers on a large scale of the things of greatest value."

In this great and important field of shipping, declared Mr. O'Connor, the United States must advance or the purpose of a world merchant marine will be clearly defeated. He asserted that figures show that whenever world cargo increases in volume, the American ship carries a little less of the cream and a little more of the skimmed milk than it did before. He urged that the American shippers see to it that the American merchant ship interests are given a more important voice in the London conference for the determination of rates, routes and cargoes. He insisted that it was because great organizations like the United States Steel Corporation and the Standard Oil Co. determine these questions before they ship cargo that they make a success of exporting.

Touching upon the matter of steel exports and the policy of the Steel Corporation, Mr. O'Connor said:

I would like to have one of you who is best qualified upon the subject to take my place for a moment and tell us why American ships in the year 1925 carried from New York to South Africa less than 400 tons of United States Steel Corporation products, when during the same period foreign vessels were carrying from New York to South African ports more than 6000 tons of the same products. It is the aim of Congress, and we are mandated to carry out that aim, to carry one-half of the American commerce. You will observe

that out of one port for one year our ships carried one-fifteenth of the steel exports. The United States Steel Corporation produced all.

Mr. O'Connor said that he was not in favor of Government operation of any business that can be privately owned, but that he was in favor of Government operation of American flag vessels until the same vessels can be profitably operated by individuals. He insisted that when American citizens become as widely informed on the subject of ocean commerce as they are on internal industry and internal development, there will be no trouble in the shipping business and a privately owned merchant marine.

In this connection he added:

In fact, Congress undertook generally, for exporters and importers who were not organized, the identical thing which the Standard Oil Co. had done for its shareholders, and the identical thing which the Steel Corporation had done for its shareholders.

It was many years ago that the Steel Corporation decided to put a fleet of boats on the Great Lakes to carry ore, and another fleet upon the oceans to carry the finished product; and it was many years ago that the Standard Oil Co. placed upon the oceans a powerful fleet of tankers. Why did these farsighted and able executives of those large industrial corporations put fleets on the oceans? They did it to secure for their products a market at all times, independent of the wishes or the interests of a foreign shipowner, a foreign government or a foreign manufacturer of steel or producer of oil. These industrial executives well understood that in foreign countries many interests, including the shipping interests, stand shoulder to shoulder in the common cause of carrying their own products to the markets of the world.

The Steel Corporation gives part of its ore-carrying business on the lakes to companies other than its own, but the Steel Corporation fixes the rate, and so on the oceans the Steel Corporation gives some of its business to ships that carry a foreign flag, but it is the Steel Corporation which fixes the rate. Without the possession of its own fleets, neither the Steel Corporation nor the Standard Oil Co. would dare to make commitments for foreign delivery which they do make.

Elect Officers of Trumbull Steel Co.

YOUNGSTOWN, Dec. 22.—At a meeting last week of directors of the Trumbull Steel Co., Warren, Ohio, vacancies on the board caused by the resignations of Jonathan Warner, William M. McFate and A. N. Flora were filled by the election of C. S. Eaton, J. O. Eaton and E. B. Greene, all of Cleveland. C. S. Eaton was elected chairman of the board; John T. Harrington, president; Charles H. Elliott, of Pittsburgh, vice-president in charge of operations, and W. B. Ohl, general auditor. E. T. Sproull was made assistant to the president; he has heretofore been assistant to the vice-president and was for a time general manager of sales. Mr. Flora continues as vice-president in charge of sales.

An executive committee of three members was created and C. S. Eaton, Philip Wick and John T. Harrington were elected members of that committee.

Directors of the Trumbull company now include besides the three named, Whitney Warner, S. Livingston Mather and W. G. Mather, Cleveland; Philip Wick and John T. Harrington, Youngstown, and W. H. B. Ward, Warren.

Mr. Elliott will assume his new duties Jan. 2. He resigns as superintendent of the South Side works at Pittsburgh of the Jones & Laughlin Steel Corporation. At one time he was superintendent of the open-hearth plant of the Sheet & Tube company, leaving there to build the open-hearth works at Weirton, W. Va., of the Weirton Steel Co., and subsequently going to the Jones & Laughlin company.

Iron and Steel Markets

Large-Scale Steel Consumption

Prices and Demand Work Stronger as Order Books Show Gains—

Another Good Week of Car Buying—Strength in
Pig Iron—More Furnaces to Start

COMING into the fourth week of December the steel trade gives further evidence of the large scale of consumption that was so marked in November. While new orders are at less than last month's rate, reports from several large companies show that the difference is not more than 10 per cent. This fact and the favorable comparison of order books today with those of a year ago make producers complacent in the face of an expected quiet period running into mid-January.

The past week has been one of heavy production, several large companies running close to 90 per cent of capacity, in view of the Christmas shutdowns which will bring this week's average down to 75 per cent or less.

Chicago mills have had a volume of sales and specifications for the third week of December that has been exceeded in only four weeks this year. Western consumers are taking more bars than in November. In the East, on the other hand, deliveries of some bars bought for the fourth quarter will not be needed until January or later.

Plans of the automobile industry point to an increased shipment of steel in the first quarter of the new year. With the strong drift toward all-steel bodies, 1926 promises to make a new record in steel consumption for motor cars.

Railroad equipment orders give a substantial tonnage of steel for specification early in the year. New cars ordered total 5525, of which 2000 are for the Baltimore & Ohio, 1000 for the Pittsburgh & West Virginia, 925 for the Atlantic Coast Line, and small lots for a number of roads. Cars pending total 8191, of which 5041 are for the Pacific Fruit Express, 2000 miscellaneous freight cars for the Southern Pacific and 1000 box cars for the Chicago, Burlington & Quincy. Of 75 locomotives ordered, 50 are for the B. & O.

The Southern Pacific is expected to place 100,000 tons of rails, the bulk going to Alabama and Colorado mills.

A new union station for Cleveland, which will require 15,000 tons of structural steel, is the one important project in fabricated steel inquiries.

Fabricated steel bookings in November, while one-fifth off from the year's high in October, bring the 11 months' total to 2,401,000 tons, which compares with 2,363,500 tons for all of 1924, the previous record.

Unfilled orders in sheets show a steady increase and that is true of most other finished products, though pipe is still a marked exception.

In November sales, production and shipments of the independent sheet manufacturers were less than in October. Bookings, however, 370,361 tons, were 10 per cent above output and 25 per cent above shipments. Unfilled orders at 636,570 tons show a gain of 41,000 tons in the month and are 105,000 tons above the figure of a year ago.

For the first half of December, independent sheet mills operated at nearly 98 per cent of the possible number of working turns.

For the most part the pig iron market is tending still more in the seller's favor. Stocks on furnace yards have been reduced further. More blast furnaces are going in, however, including one Lackawanna at Buffalo and Clinton at Pittsburgh. Scheduled to start early in January are one at Ashland, Ky., Josephine and Punxy in western Pennsylvania, the furnace at Struthers, Ohio, and two in Alabama.

Rather free offering of pig iron at Detroit is an exception to the general condition. Some Buffalo iron has gone to Detroit by boat. Also, Ironton, Ohio, iron has been sold for water delivery to Evansville, Ind., at \$1 below the price for Chicago iron. A late sale of Tennessee pig iron for use in the Birmingham district is the first of that sort in years.

A fresh demand for coke for domestic use has advanced the price of blast furnace coke by \$1.50 to \$1.75 since last week. Sales to furnaces have been made at \$5 to \$5.50 at ovens, while crushed coke brings \$7 to \$8.

German mills are offering Bessemer steel at 1.70c. for bars and 1.95c. for hot rolled bands, f.o.b. dock, Boston, duty paid. Sales of 3000 tons of reinforcing steel have been made to two Southern buyers. As low as \$2.75 per keg, c.i.f., Atlantic port, is mentioned on Belgian nails.

European competition is checking an advance in pig iron in Canada.

THE IRON AGE composite prices have not changed this week. Pig iron remains at \$21.54 per gross ton for the fourth week and finished steel at 2.453c. per lb. for the third week.

Pittsburgh

Heavy Unfilled Orders for Sheets—Coke Again Advances

PITTSBURGH, Dec. 22.—The effect of the holiday season and of inventory time upon steel market activities, though apparent, is not nearly so marked as usual. There are a good many cases where shipments are being held up to permit annual stock-taking or to escape inventory taxes which are imposed in some States, but the more general condition is that orders are still developing in good volume and shipments, as a whole, are equal to, or in excess of, those of the same period last month. Sheets are one striking example of sustained shipments, figures for the month to date, as reported by independent manufacturers, showing a gain of approximately 5000 tons as compared with last month. Some idea of the proportions of the demand for sheets may also be gleaned from the fact that in the first half of this month the independent mills oper-

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Dec. 22, 1925	Dec. 15, 1925	Nov. 24, 1925	Dec. 22, 1924
No. 2X, Philadelphia	\$24.26	\$24.26	\$23.76	\$25.01
No. 2, Valley furnace	20.50	20.50	20.50	22.00
No. 2, Southern, Cin'ti	25.69	25.69	24.69	24.05
No. 2, Birmingham, Ala.	22.00	22.00	21.00	20.00
No. 2 foundry, Ch'go furn.	23.00	23.00	23.00	23.00
Basic, del'd, eastern Pa.	23.00	23.00	22.50	23.50
Basic, Valley furnace	20.00	20.00	20.00	21.50
Valley Bessemer del'd Pbg.	22.76	22.76	22.76	24.26
Malleable, Chicago furn.	23.00	23.00	23.00	23.00
Malleable, Valley	20.50	20.50	20.50	22.00
Gray forge, Pittsburgh	21.76	21.76	21.76	23.26
L. S. charcoal, Chicago	29.04	29.04	29.04	29.04
Ferromanganese, furnace	115.00	115.00	115.00	105.00

Rails, Billets, etc., Per Gross Ton:

O-h. rails, heavy, at mill	\$43.00	\$43.00	\$43.00	\$43.00
Bess. billets, Pittsburgh	35.00	35.00	35.00	36.00
O-h. billets, Pittsburgh	35.00	35.00	35.00	36.00
O-h. sheet bars, Pbg.	36.00	36.00	36.00	37.00
Forging billets, base, Pbg.	40.00	40.00	40.00	42.50
O-h. billets, Phila.	40.30	40.30	40.30	41.67
Wire rods, Pittsburgh	45.00	45.00	45.00	48.00
Cents	Cents	Cents	Cents	
Skelp, gr. steel, Pbg., lb.	1.90	1.90	1.90	2.00
Light rails at mill	1.65	1.65	1.65	1.86

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.32
Iron bars, Chicago	2.00	2.00	2.00	2.00
Steel bars, Pittsburgh	2.00	2.00	2.00	2.10
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, New York	2.34	2.34	2.34	2.44
Tank plates, Pittsburgh	1.90	1.90	1.90	1.90
Tank plates, Chicago	2.10	2.10	2.10	2.20
Tank plates, New York	2.04	2.04	1.94	2.34
Beams, Pittsburgh	1.90	1.90	1.90	2.10
Beams, Chicago	2.10	2.10	2.10	2.20
Beams, New York	2.24	2.24	2.24	2.34
Steel hoops, Pittsburgh	2.50	2.50	2.50	2.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

THE IRON AGE Composite Prices

Finished Steel

Dec. 22, 1925, 2.453c. Per Lb.

One week ago	2.453c.
One month ago	2.439c.
One year ago	2.531c.
10-year pre-war average	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

High	Low
1925 2.560c., Jan. 6	2.396c., Aug. 18
1924 2.789c., Jan. 15	2.460c., Oct. 14
1923 2.824c., April 24	2.446c., Jan. 2

Pig Iron

Dec. 22, 1925, \$21.54 Per Gross Ton

One week ago	\$21.54
One month ago	21.29
One year ago	22.09
10-year pre-war average	15.72

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

High	Low
1925 \$22.50, Jan. 13	\$18.96, July 7
1924 22.88, Feb. 26	19.21, Nov. 3
1923 30.86, March 20	20.77, Nov. 20

ated almost 98 per cent of the possible number of working turns. Unfilled orders in sheets are steadily mounting and that seems to be true of all other finished products with the exception of pipe, which has not yet begun to feel the stimulus of an improved outlook for oil well drilling in 1926.

There is no occasion to make any change in steel prices, but the market has a very firm tone and as their obligations grow, manufacturers are taking a stronger stand. There is a tight situation already in semi-finished steel, because there are few makers who do not have finishing capacity. Being well provided with orders for finished products and having covered their regular customers on billets, slabs and sheet bars, producers appear to have total obligations fully equal to probable production over the next 90 days.

In looking ahead to 1926, the prospect is viewed with satisfaction and the expectation is that the consumption of steel will be well up to the volume of the past year. It is hardly expected that structural steel business will maintain this year's gait, but as an offset to any loss in that direction the railroads are counted on to buy many more cars in 1926 than in 1925, and the plans of the automobile industry point to a great increase in the consumption of steel in that field. With the drift strongly in favor of all-steel bodies, even the production of the same number of cars next year as in 1925 would mean an increase in the steel consumption. What the steel industry hopes that 1926 will produce, however, is a wider margin of profit.

Coke prices have had a fresh upswing since a week ago, sales of furnace grade having been made at from

\$1.50 to \$1.75 a ton over the prices of a week ago. While the fact that the Connellsburg operators have succeeded in disposing of a considerable part of their first quarter output to blast furnaces and foundries is a contributory cause of the stronger market, the principal explanation is in the fact that events of the week have pointed to an indefinite continuance of the anthracite mine tie-up and consequently a marked increase in demand for crushed coke as a substitute for hard coal has developed. Not a few of the Connellsburg operators now have crushers and screens and, having an outlet for a considerable portion of their production for domestic use, are not as dependent upon blast furnace and foundry demand as usual.

The pig iron market still is very quiet, but prices are holding very firmly, because available supplies are not burdensome and pressure to sell is absent. Scrap is also quiet and firm.

There will be some loss of production this week on account of the observance of the Christmas holidays, since finishing mills will quite generally suspend from Thursday afternoon until midnight Sunday.

Pig Iron.—The Struthers Furnace Co., Struthers, Ohio, which will begin operations soon after the turn of the new year, has sold enough iron to provide it with a backlog of business, having made a slight concession from the regular market price of foundry iron to secure orders amounting to about 15,000 tons. This business, because of its special character, is not having any effect on the prices of other producers who, while experiencing a lull in demand, are very well sold for first quarter and meanwhile are making steady inroads upon their yard stocks. There is almost no pressure to sell iron, and stocks on furnace yards have been reduced to such an extent that merchant producers view the situation as favorable, barring a possible accumulation of surplus pig iron by the steel companies. In view of the fact that steel plants are well supplied with business, there is not much real fear of competition from that direction. Most current business is in carload lots and on such business makers have had no trouble in obtaining the prices they have been quoting. The stack of the Clinton Iron & Steel Co., Pittsburgh, has been blown in after several months of idleness and one of the Josephine, Pa., furnaces of the McKinney Steel Co. will be lighted around the first of the year, as will the Punxy furnace at Punxsutawney, Pa.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$20.00
Bessemer	21.00
Gray forge	20.00
No. 2 foundry	20.50
No. 3 foundry	20.00
Malleable	20.50
Low phosphorus, copper free	\$28.00 to 28.60

Ferroalloys.—Consumers continue to buy ferromanganese in strict accordance with their real requirements, and the ability of domestic producers to ship promptly against orders also tends to restrict forward buying. The price remains very firm at \$115, Atlantic seaboard, for both domestic and foreign material. There is fairly good specifying against contracts for spiegeleisen and the higher grades of ferrosilicon, but not much new business. Prices are given on page 1769.

Semi-Finished Steel.—This market is very firm and the prevailing idea is that prices will advance soon after the turn of the year if not before. Producers generally have given their regular customers full protection against their probable first quarter requirements, but the fact that there are a number of inquiries in the market indicates that some do not regard this coverage as sufficient. With most makers of semi-finished steel also producers of finished steel and having good order books in the latter, there is not much pressure for additional business in semi-finished steel. It is a tight situation, but as yet the regularly announced first quarter prices of \$35, Pittsburgh or Youngstown, for large billets and slabs and \$36 for sheet bars and small billets and slabs have not been exceeded except in two instances. These cases involve two 5000-ton lots of very wide, high carbon slabs, one of which was sold at \$37, Pittsburgh, and the other at

\$38, Pittsburgh. There is an extra for high carbon steel, and the buyer also had to pay for the fact that few makers can roll slabs to the width desired. An Allegheny Valley sheet maker recently closed for about 40,000 tons of sheet bars and slabs for first quarter shipment, paying \$36 for the sheet bars and \$35 for the slabs. Three Pittsburgh district mills shared in the business. Buyers probably would have difficulty in securing further tonnages, particularly of open-hearth steel at these prices, but the market hardly is quotable higher. It is not unusual for the mills to be well committed at this time, but it will take a few weeks to determine whether a shortage will actually develop; there was a similar situation a year ago, with predictions of a shortage, which, however, failed to materialize. First quarter contracts for forging billets appear to have been written at \$40, base, and makers now are asking \$41. There are quotations of \$46, base Pittsburgh or Cleveland, on wire rods, but \$45 does not appear to have been exceeded as yet. Prices are given on page 1769.

Steel and Iron Bars.—There has been some holding up of shipments on account of inventories or a desire to escape the inventory tax imposed in some States, but it has been no greater than usual and orders for January and later shipments are developing in good volume. This will probably be a week of light production, because most mills will lose the last turn on Thursday and the three on Christmas day, and efforts to start on Saturday will probably be defeated by the failure of the men to appear for work. Some companies will not attempt to operate on Saturday. Bars show considerable firmness, but the effort at the moment is to maintain rather than advance prices. They are given on page 1767.

Structural Steel.—Considerable fabricated steel business is being figured, but actual awards are not yet sufficiently heavy to permit the mills to advance prices for plain material. The mills would like to establish a minimum of 2c., base Pittsburgh, on large structural shapes, but while that price is fairly common on the smaller lots, the sizable tonnages continue to command 1.90c. The November report of the Department of Commerce shows structural lettings equal to 70 per cent of the country's capacity, against 85 per cent in the same month last year, 54 per cent two years ago and 49 per cent three years ago. The average for the year to date is slightly under 75 per cent, which compares with 69 per cent last year and 64 per cent two years ago. Steel fabricators here are cheerful about the 1926 outlook. It is believed that railroad bridges and terminals and public buildings will offset losses in other kinds of construction. Plain material prices are given on page 1767.

Plates.—The market has not yet reached a sufficiently well sold condition to stand higher prices. The effort at present is to maintain rather than advance prices. Local car building shops are much better provided with business than they were a year ago and some of the other plate consuming industries also are doing better, but plate making capacity is large and present prices keep idle some mills that could be operated at higher levels. Prices are given on page 1767.

Wire Products.—Inventory taking is a factor so far as early shipments are concerned, but is not interfering with the placing of business for delivery after Jan. 1. Producers in this district have good order books for January, particularly in plain wire. Manufacturing consumers are being protected for the first quarter and jobbers for 60 days, and these sales restrictions are being much more strictly observed than they were a year ago, when many first quarter contracts were taken from jobbers. Prices are holding well at recent levels. They are given on page 1767.

Rails and Track Supplies.—Makers in this district are steadily filling up with accessories for early 1926 delivery, but are not yet getting many specifications, which will come as the time for rail laying draws near. Jobbers are replenishing stocks of small spikes, having had a good many demands recently with the improvement in coal mine operations. Light rails seem to be

Prices of Finished Iron and Steel Products (Carload Lots)

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. P'gh mills	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
Del'd Philadelphia	2.32c. to 2.42c.
Del'd New York	2.34c. to 2.44c.
Del'd Cleveland	2.19c.
F.o.b. Birmingham	2.15c. to 2.25c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.40c.

Billet Steel Reinforcing

	Base Per Lb.
F.o.b. Pittsburgh mills	2.00c. to 2.10c.

Rail Steel

	Base Per Lb.
F.o.b. mill	1.80c. to 1.90c.
F.o.b. Chicago	2.00c. to 2.10c.

Iron

	Base Per Lb.
Common iron, f.o.b. Chicago	2.00c.
Refined iron, f.o.b. P'gh mills	3.00c.
Common iron, del'd Philadelphia	2.22c.
Common iron, del'd New York	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c. to 2.00c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	1.99c. to 2.09c.
Del'd Philadelphia	2.02c. to 2.12c.
Del'd New York	2.04c. to 2.14c.
C.i.f. Pacific ports	2.20c. to 2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c. to 2.10c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c. to 2.19c.
Del'd Philadelphia	2.22c. to 2.32c.
Del'd New York	2.24c. to 2.34c.
C.i.f. Pacific ports	2.35c. to 2.40c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh	2.50c.
All gages, 6 in. and wider, P'gh	2.30c.
All gages, 6 in. and narrower, Chicago	2.60c.
All gages, wider than 6 in., Chicago	2.50c.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. P'gh mills	2.50c.
Bars, f.o.b. Chicago	2.50c.
Bars, Cleveland	2.55c.
Shafting, ground, f.o.b. mill	*2.70c. to 3.00c.
Strips, f.o.b. P'gh mills	3.90c.
Strips, f.o.b. Cleveland mills	3.90c.
Strips, delivered Chicago	4.20c.
Strips, f.o.b. Worcester mills	4.08c.

*According to size.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails	\$2.65
Galv'd nails, 1-in. and longer	4.65
Galv'd nails, shorter than 1 in	4.90
Galv'd staples	3.35
Polished staples	3.10
Cement coated nails, base, per count keg	1.85

	Base Per 100 Lb.
Bright plain wire, No. 9 gage	\$2.50
Annealed fence wire	2.65
Spring wire	3.50
Galv'd wire, No. 9	3.10
Barbed wire, galv'd	3.35
Barbed wire, painted	3.10

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant, and Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

Woven Wire Fence

Base to Retailers Per Net Ton

	Base to Retailers Per Net Ton
F.o.b. Pittsburgh	\$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.	66.00
F.o.b. Chicago district mills	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

Base Per Lb.

Nos. 9 and 10, f.o.b. Pittsburgh	2.50c.
Nos. 9 and 10, f.o.b. Ch'go dist. mills	2.60c.
Nos. 9 and 10, del'd Phila'phia	2.72c. to 2.82c.

Box Annealed, One Pass Cold Rolled

No. 28, f.o.b. Pittsburgh	3.35c.
No. 28, f.o.b. Ch'go dist. mill	3.45c.
No. 28, del'd Phila'phia	3.57c. to 3.67c.

Galvanized

No. 28, f.o.b. Pittsburgh	4.60c.
No. 28, f.o.b. Chicago dist. mill	4.70c.
No. 28, del'd Phila'phia	4.82c. to 4.92c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	3.35c.
No. 28, f.o.b. Chicago dist. mill	3.45c.

Automobile Body Sheets

No. 22, f.o.b. Pittsburgh	4.50c.
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Long Ternes

No. 28, 8-lb. coating, f.o.b. mill	4.85c.
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Terne Plate

(F.o.b. Morgantown or Pittsburgh)

	Per Base Box
Standard cokes, f.o.b. P'gh district mills	\$5.50

	Ind.
	5.60

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E.	Base Per 100 Lb.
2100* (1/4% Nickel, 0.10% to 0.20% Carbon)	\$3.25 to \$3.80

2300 (3 1/4% Nickel)	4.60 to 4.70
2500 (5% Nickel)	5.80 to 5.90

3100 (Nickel Chromium)	5.80 to 5.90
3200 (Nickel Chromium)	5.25 to 5.35

3300 (Nickel Chromium)	7.25 to 7.35
3400 (Nickel Chromium)	6.50 to 6.60

5100 (Chromium Steel)	3.60
5200* (Chromium Steel)	7.50 to 8.25

6100 (Chrom. Vanadium bars)	4.30 to 4.40
9250 (Silicon Manganese spring steel)	3.25 to 3.30

Carbon Vanadium (0.45% to 0.55% Carbon)	4.20 to 4.45
Carbon, 0.15% Vanad.	4.20 to 4.45

Nickel Chrome Vanadium (0.60% Nickel, 0.50% Chrom., 0.15% Vanad.)	4.55 to 4.65
1.10 Chrom. 0.25-0.40 Molyb.	4.35 to 4.45

Chromium Molybdenum bars (0.50-0.70 Chrom., 0.15-0.25 Molyb.)	3.50 to 3.60
Chromium Molybdenum spring steel (1-1.25 Chrom., 0.30-0.50 Molyb.)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2 1/4-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

Per Gross Ton

Standard, f.o.b. mill

Base Per Lb.

Light (from billets), f.o.b. mill	\$1.60c. to 1.70c.
Light (from billets), f.o.b. Ch'go mill	1.80c. to 1.90c.

Light (from rail steel), f.o.b. mill	\$1.60c. to 1.60c.
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finding a better sale for the same reason; it took some time for heavier mine operations to bring out light rail orders, because so many mines had bought rails shortly before closing down. Most makers are now quoting light rails on a gross ton basis; the freight is figured per gross ton and considerable price conversion is eliminated in quoting on that basis instead of per pound. Local makers are quoting \$36 to \$37 per gross ton for billet rails. Other prices are given on page 1767.

Tubular Goods.—No material betterment is yet observed in demand for pipe, but makers are hopeful that the turn of the year will see a larger demand for oil country goods. The year, as a whole, has been a good one in production and consumption, and the dullness at present is largely due to year-end liquidation of stocks for inventories. Several large tonnages of large outside diameter pipe for gas lines have added very materially to the year's production. Prices are steady with no more shading of regular quotations than is usual in time of slack demand. Boiler tube business can stand much improvement. Discounts are given on page 1767.

Sheets.—Lighter operations are the rule among sheet mills this week, not only on account of the holidays, which will mean a fairly general suspension from Thursday afternoon until midnight Sunday, but because of inventory considerations. Automobile body makers serving some of the larger car builders do not want much material to arrive while those companies are down for inventories. Good January specifications, however, are coming out for body sheets and, although this year's production was large, there are reports that several makers expect greatly enlarged production for 1926. Specifications for finishes of sheets for early 1926 delivery are in good volume, but current demands are light. Observance of quotations is good; they are given on page 1767.

Tin Plate.—All makers now are provided with contracts covering their production for the first half of 1926 and the business has simmered down to the mere placing of specifications. January quotas have already been placed and those for February are coming in steadily. Since to a large extent shipments over the first three months of the year are for stock, either in original form or as cans, there is not the urgent call for shipments that will develop later when packing gets actively under way.

Cold-Finished Steel Bars and Shafting.—Inventory time is having some effect upon shipments, but is not interfering much with the placing of early 1926 business. There is nothing new as to prices.

Hot-Rolled Flats.—Orders are coming along steadily for early 1926 delivery and the record of local makers is that incoming business is running somewhat ahead of that of last month. Shipments are lighter, but that is not disturbing, since a smaller movement is expected at this time of year. Prices are firm at recent levels. They are given on page 1767.

Cold-Rolled Strips.—Lighter operations of many of the automobile makers, due to inventory taking, have affected shipments to some extent, but orders for early 1926 shipment are coming along well and makers are adding to their backlog. The market is firm at 3.90c., base Pittsburgh or Cleveland, but efforts to get more are not successful.

Bolts, Nuts and Rivets.—Year-end inventories have had much less effect than usual upon orders for bolts and nuts this year, and makers here report a steady increase in their first quarter obligations. Observance of quotations is good. Most makers are holding firmly to \$2.60, base per 100 lb., for large rivets. But concessions still are appearing, particularly on attractive business. Prices and discounts are given on page 1769.

Coke and Coal.—Furnace coke prices are again soaring, chiefly because of a revival of Eastern demand for crushed coke to replace hard coal. This demand has absorbed a large part of the surplus production of the past few weeks and, since a large number of Connellsville operators are now equipped with crushers and screens and there appears to be no prospect of an early settlement of the anthracite strike, much of the

output is now being prepared for domestic use. This, of course, has cut down the offerings of run-of-oven coke, and there has been enough demand for coke for blast furnace use to send prices up sharply. We note sales of spot coke for blast furnace use at \$5 to \$5.50 per net ton at ovens, and in the past day or two brokers have bought to sell again and paid the higher figure. These prices compare with \$3.75 to \$4 a week ago. Spot foundry coke also was advanced, but not as much as furnace grade. Production of 72-hr. coke, however, is falling and producers are able to get 50c. a ton more than they could a week ago. As much as \$5 is now being asked on first quarter tonnages of furnace coke, but most of the furnaces that are in blast or about to go in, and use beehive oven coke, already are covered by contracts at prices averaging about \$4 per net ton at ovens. The situation in coke generally is favorable to producers and will be so long as crushed coke commands prices of \$7 and \$8 a ton at ovens, which is the present range. Coal prices still suffer because of an oversupply. Prices are given on page 1769.

Old Material.—Trading is slow in this market, but prices are holding because a heavier demand is looked for after Jan. 1, and the amount of material coming on the market is inconsiderable. Sheet scrap has weakened slightly. In the past few days the sale of compressed sheets at more than \$18 has been impossible, while on bundled sheets \$17 is about all that could be obtained.

We quote for delivery to consumer's mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton		
Heavy melting steel	.....	\$19.00 to \$19.50
No. 1 cast, cupola size	.....	17.50 to 18.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	.....	20.50 to 21.50
Compressed sheet steel	.....	18.00
Bundled sheets, sides and ends	.....	17.00
Railroad knuckles and couplers	.....	21.50 to 22.00
Railroad coil and leaf springs	.....	21.50 to 22.00
Low phosphorus blooms and billet ends	.....	24.00 to 24.50
Low phosphorus plates and other material	.....	23.00 to 23.50
Low phosphorus punchings	.....	21.00 to 21.50
Railroad malleable	.....	19.50 to 20.00
Steel car axles	.....	23.00 to 23.50
Cast iron wheels	.....	18.50 to 19.00
Rolled steel wheels	.....	22.00 to 22.50
Machine shop turnings	.....	14.00 to 14.50
Short shoveling turnings	.....	15.00 to 15.50
Sheet bar crops	.....	20.50 to 21.50
Heavy steel axle turnings	.....	17.00 to 17.50
Short mixed borings and turnings	.....	15.00 to 15.50
Heavy breakable cast	.....	17.00 to 17.50
Stove plate	.....	14.50 to 15.00
Cast iron borings	.....	15.00 to 15.50
No. 1 railroad wrought	.....	15.00 to 15.50
No. 2 railroad wrought	.....	19.00 to 19.50

HIGH COKE PRODUCTION

November By-Product Output Highest for Any Month—Beehive Coke Also Up

WASHINGTON, Dec. 22.—The current output of by-product coke is the highest on record, according to the Bureau of Mines, which states that production during November, as reported by operators, amounted to 3,557,000 net tons, an increase of 155,000 tons, or 4.6 per cent, compared with October. The coke plants operated at about 88 per cent of capacity. With the inclusion of the new plant at Troy, N. Y., and the rebuilt plant at Chester, Pa., the total number of by-product plants now in existence is 80, of which 74 were active during November.

Of the total output of by-product coke during November, 2,953,000 tons, or 83 per cent, was made in plants associated with blast furnaces, and 604,000 tons or 17 per cent at merchant or other plants.

Beehive coke production in November totaled 1,213,000 net tons, an increase of 207,000 tons, or 20.6 per cent, compared with October. With the total production of all coke amounting to 4,770,000 tons, the by-product plants contributed 75 per cent.

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

Per Gross Ton

Rolling, 4-in. and over.....	\$35.00
Rolling, 2-in. and smaller.....	36.00
Forging, ordinary.....	40.00
Forging, guaranteed.....	45.00

Sheet Bars

Per Gross Ton

Open-hearth or Bessemer.....	\$36.00
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Slabs

Per Gross Ton

8 in. x 2 in. and larger.....	\$35.00
6 in. x 2 in. and smaller.....	36.00

Skelp

Per Lb.

Grooved.....	1.90c.
Sheared.....	1.90c.
Universal.....	1.90c.

Wire Rods

Per Gross Ton

Common soft, base, No. 5 to $\frac{1}{2}$ -in.....	\$45.00
Common soft, coarser than $\frac{1}{2}$ -in.....	\$2.50 over base
Screw stock.....	\$5.00 per ton over base
Carbon 0.20% to 0.40%.....	3.00 per ton over base
Carbon 0.41% to 0.55%.....	5.00 per ton over base
Carbon 0.56% to 0.75%.....	7.50 per ton over base
Carbon over 0.75%.....	10.00 per ton over base
Acid.....	15.00 per ton over base

*Chicago mill base is \$46. Cleveland mill base, \$45.

Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Per Gross Ton

Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesaba Bessemer, 51.50% iron.....	4.40
Mesaba non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore

Per Unit

Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian.....	9.50c. to 10c.
Iron ore, Swedish, average 66% iron.....	9.50c.
Manganese ore, washed, 51% manganese from the Caucasus.....	45c.
Manganese ore, Brazilian or Indian, nominal.....	42c.
Tungsten ore, high grade, per unit, in 60% concentrates.....	\$12.00 to \$13.00

Per Ton

Chrome ore, Indian basic, 48% Cr ₂ O ₃ , crude, c.i.f. Atlantic seaboard.....	\$22.50 to \$24.00
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Per Lb.

Molybdenum ore, 85% concentrates of MoS ₂ , New York.....	65c. to 70c.
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Coke

Per Net Ton

Furnace, f.o.b. Connellsburg prompt.....	\$5.00 to \$5.50
Foundry, f.o.b. Connellsburg prompt.....	5.50 to 6.00
Foundry, by-product, Ch'go ovens.....	10.50
Foundry, by-product, New England, del'd.....	13.00
Foundry, by-product, Newark or Jersey City, del'd.....	11.52
Foundry, Birmingham.....	5.75
Foundry, by-product, St. Louis or Granite City.....	10.00

Coal

Per Net Ton

Mine run steam coal, f.o.b. W. Pa. mines.....	\$1.50 to \$2.10
Mine run coking coal, f.o.b. W. Pa. mines.....	2.00 to 2.25
Mine run gas coal, f.o.b. W. Pa. mines.....	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines.....	1.40 to 1.50
Gas slack, f.o.b. W. Pa. mines.....	1.50 to 1.60

Ferromanganese

Per Gross Ton

Domestic, 80%, furnace or seab'd.....	\$115.00
Foreign, 80%, Atlantic or Gulf port, duty paid.....	115.00

Spiegeleisen

Per Gross Ton Furnace

Domestic, 19 to 21%.....	\$32.00 to \$34.00
Domestic, 16 to 19%.....	31.00 to 33.00

Electric Ferrosilicon

Per Gross Ton Delivered

50%.....	\$85.00
75%.....	145.00
10%.....	\$42.00

11%.....	42.00
14 to 16%.....	\$45 to 46.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

10%.....	\$35.00
11%.....	37.00
12%.....	\$39.00

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

6%.....	\$27.50
7%.....	28.50
8%.....	29.50
9%.....	31.00
10%.....	\$33.00
11%.....	35.00
12%.....	37.00

Other Ferroalloys

Ferro-tungsten, per lb. contained metal, del'd.....	\$1.15 to \$1.20
Ferro-chromium, 4% carbon and up, 60 to 70% Cr., per lb. contained Cr. delivered.....	11.50c.
Ferro-vanadium, per lb. contained vanadium, f.o.b. furnace.....	\$3.25 to \$4.00
Ferro-carbon-titanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$200.00
Ferro-phosphorus, electrolytic, or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton.....	\$91.00
Ferro-phosphorus, electrolytic, 24%, f.o.b. Anniston, Ala., per net ton.....	\$122.50

Fluxes and Refractories

Fluorspar

Per Net Ton

Domestic 95% and over calcium fluoride, not over 6% silica, f.o.b. Illinois and Kentucky mines.....	\$17.50
No. 2 lump.....	19.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid, \$17.00 to \$17.50	
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/2% silica, f.o.b. Illinois and Kentucky mines.....	\$32.50

Fire Clay

Per 1000 f.o.b. Works

High Duty	Moderate Duty
Pennsylvania	\$43.00 to \$46.00
Maryland	48.00 to 50.00
Ohio	48.00 to 46.00
Kentucky	48.00 to 45.00
Illinois	48.00 to 45.00
Missouri	40.00 to 43.00
Ground fire clay, per ton.....	6.50 to 7.50

Hilles Brick

Per 1000 f.o.b. Works

Pennsylvania	\$40.00
Chicago	49.00
Birmingham	54.00
Silica clay, per ton.....	\$8.00 to 9.00

Magnesite Brick

Per Net Ton

Standard size, f.o.b. Baltimore and Chester, Pa.	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00

Chrome Brick

Per Net Ton

Standard size.....	\$48.00
Large Rivets	

Large Rivets

Base Per 100 Lb.

F.o.b. Pittsburgh	\$2.50
F.o.b. Cleveland	2.70
F.o.b. Chicago	2.75

Small Rivets

Per Cent Off List

F.o.b. Pittsburgh	70 and 10
F.o.b. Cleveland	70 and 10
F.o.b. Chicago	70, 10 and 5 to 70 and 10

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

Per Cent Off List	
Milled cap screws.....	80 and 10
Milled standard set screws, case hardened.....	80
Milled headless set screws, cut thread.....	80
Upset hex. head cap screws, U. S. thread.....	80, 10 and 10
Upset hex. cap screws,	

Chicago

Southern Pacific to Buy 100,000 Tons of Rails—Shape Bookings Best of Year

CHICAGO, Dec. 22.—Chicago district mills are rounding out one of the best 12-month periods in their history. The leading interest is now operating at 88 per cent of ingot capacity and has in blast 10 stacks at Gary, six at South Chicago and one at Joliet. The foremost independent is operating at 85 per cent of ingot capacity and has three stacks in blast. No early change in the number of active stacks is looked for, although it is admitted that considerable cold pig iron is being picked up to keep open-hearth furnaces going at the present high rate. In new business, specifications and shipments, December to date is well ahead of the corresponding period of last year. Sales and specifications during the week have been exceeded only four times this year, indicating that there has been practically no recession in the demand for finished steel. Both new bookings and orders passed to entry at the mills are heavier than shipments.

Rail mills are speeding up, being pressed by several railroads for delivery against new contracts. Miscellaneous orders during the week added 8000 tons of rails and 3500 tons of fastenings to the books of local mills. The Southern Pacific is expected to enter the market in the near future for not less than 100,000 tons of rails and a proportionate tonnage of fastenings. If reports are correct, the bulk of this tonnage will go to the Colorado Fuel & Iron Co. and the Tennessee Coal, Iron & Railroad Co. Preliminary estimates indicate that railroads have purchased approximately the same tonnage of rails this year as were contracted for in 1924. The fact that some railroads are already asking for delivery on recent contracts leads some to believe that the secondary buying movement in rails which normally comes in the spring will be in good volume.

New business booked and specifications forwarded for structural material show the week now closing to be the best of any like period so far this year. December bar business is not only well sustained but to date is running ahead of November.

Merchant blast furnace operations are unchanged and production is now said to be about equal to shipments. There have been only four months this year—February, March, April and May—when shipments have not exceeded production. It is reported that as an average throughout the year, shipments have been in excess of production by about 6 per cent.

Ferroalloys.—Several carlot sales of ferromanganese are reported at \$115, seaboard. A fair number of spot carloads of spiegeleisen have been taken by Chicago district users at \$34, base furnace, or \$41.76, delivered.

We quote 80 per cent ferromanganese, \$122.56, delivered; 50 per cent ferrosilicon, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$41.76, delivered.

Pig Iron.—The outstanding transaction of the week was the purchase of 825 tons of malleable and 1000 tons of foundry iron by a Milwaukee user. It is said that approximately half of the malleable has already been shipped against the order. December shipments of pig iron will total slightly less than those of November, thus bringing production on about an equal basis with shipments. With a further decrease in shipments, looked for by makers in the remainder of the month, it is probable that furnaces will be in a position to balance stocks. No change in stack operations is now contemplated. A few carlots of charcoal iron are reported as having been sold at \$29.04, delivered. Silvery has been slightly more active and several users have taken small tonnages for immediate delivery on the basis of \$29.50, Jackson, for 8 per cent. Sellers report that forward buying of this commodity is progressing at \$1 advance, or \$30.50, Jackson, for the 8 per cent grade. Both Southern and low phosphorus are un-

changed in a quiet market. Only a few scattered sales of Canadian iron are reported in the northern part of Wisconsin and Michigan.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75		
to 2.25	.....	\$23.00
Northern No. 1 foundry, sil. 2.25		
to 2.75	.....	23.50
Malleable, not over 2.25 sil.	.....	23.00
High phosphorus	.....	23.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	.....	29.04
Southern No. 2 (all rail)	.....	27.01
Southern No. 2 (barge and rail)	.....	26.18
Low phosph., sil. 1 to 2 per cent, copper free	.....	\$31.20 to 31.60
Silvery, sil. 8 per cent	.....	34.29
Ferrosilicon, 14 to 16 per cent	.....	45.25 to 45.75

Plates.—Western plate makers do not expect to participate heavily in the steel required for cars placed last week, since Eastern roads were the principal buyers. Local mills, however, have booked 9000 tons of plates, shapes and bars and 2350 tons of axles for 87 passenger cars to be built for the New York Central and 300 sleepers being constructed by the Pullman Car & Mfg. Co. The Chicago & North Western Railway is inquiring for material to repair 450 box cars in its own shops, and the Chicago, Burlington & Quincy is asking for prices on 1000 box cars, this inquiry having been cut down from the original request for 1500 cars. The Union Pacific, which was reported as being in the market for 100 tank cars, is said to have withdrawn the inquiry and to have leased that number of cars from the General American Tank Car Corporation. Oil storage tank tonnage booked during the week was light, amounting to only a few hundred tons. Demand for plates is showing substantial improvement and both specifications and shipments are in excess of those for the corresponding period of last year.

The mill quotation is 2.10c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Bars.—December soft steel bar specifications are running well ahead of the average for November. Automobile manufacturers are still specifying freely in anticipation of an active period in the new year. Car builders are taking more steel, and farm implement and tractor manufacturers are forwarding specifications at an unchanged rate. New tonnage booked is well in excess of shipments. There is no change from the mill price of 2.10c., Chicago. Rail steel bar makers report that bookings carried over to the new year will be heavier than in January of this year. Mill operations are unchanged and prices are steady at 2c. to 2.10c., Chicago. Farm implement makers are specifying more liberally, largely for delivery after Jan. 1. On the other hand, bed manufacturers have passed their seasonal peak and orders and specifications from them have declined slightly. Requirements of car manufacturers are now making an impression on bar iron mills, which report a substantial increase in new business at the market quotation of 2c., Chicago. Alloy steel bar mills are operating at an unchanged rate, with prices steady.

Mill prices are: Mild steel bars, 2.10c.; common bar iron, 2c., Chicago; rail steel bars, 2c. to 2.10c., Chicago.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.60c. for rounds and hexagons and 4.10c. for flats and squares; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c.

Rails and Track Supplies.—The Soo Line and its subsidiaries are reported as contemplating entering the market this week for 75 miles of track. This will include both 80 and 90-lb. rail sections. Rail tonnage placed during the week was light, one maker reporting a total in miscellaneous lots of 8000 tons. Rail mills are speeding up and operations are well above those of November. In some instance, shipments have been made against new contracts, indicating that several railroads are in need of track materials at this time.

Track fastenings are moving in good volume, one maker having booked 3500 tons.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, 1.80c. to 1.90c. f.o.b. maker's mill.

Standard railroad spikes, 2.90c. to 3c. mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.35c.; f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.55c., base, and track bolts, 4.55c., base.

Wire Products.—This week is showing a slight recession both in new buying and specifications, although December as a whole is said to have brought forth a substantial volume of business. Tonnage on books which will be carried over into the first quarter is reported as well over that brought forward into the corresponding period of this year. Mill operations are unchanged at 70 per cent, or slightly better. For mill prices, which are steady, see page 1767.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, \$3.30 per 100 lb.; common wire nails, \$3.05 per keg; cement-coated nails, \$2.05 to \$2.20 per count keg.

Sheets.—Chicago sheet mills are promising four to six weeks' delivery. Specifications are holding up well, although they largely call for shipment after the first of the year. The price situation is unchanged.

Chicago delivered prices from mill, 3.50c. for No. 28 black, 2.65c. for No. 10 blue annealed and 4.75c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago; 3.50c. base for blue annealed, 4.10c. base for black, and 5.25c. base for galvanized.

Structural Material.—New business and specifications for plain material are unusually heavy, running well ahead of any previous week so far this year. Mill prices are firm at 2.10c., Chicago. Structural awards are less in total volume than during the previous week and new inquiries are not so numerous. On the other hand, engineers and architects are said to be well loaded with projects which are in the making. Contracts placed with fabricators during the week amounted to about 3000 tons. Chicago district shops are reported to have about three months' work ahead.

The mill quotation on plain material is 2.10c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Cast Iron Pipe.—The Chicago market is quiet and inquiries are small. The prevailing price is \$42, base Birmingham, or \$50.20, delivered, for 6-in. and larger diameters. Detroit is advertising for 4500 tons of 36-in. Class C. Dearborn, Mich., will take bids this week on 3000 tons of 6, 8, 10 and 16-in. Class B pipe, and Downer's Grove, Ill., will receive tenders on 1600 tons of 6, 8, 10 and 12-in., Class B.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., \$54.20; 6-in. and over, \$50.20; Class A and gas pipe, \$4 extra.

Bolts, Nuts and Rivets.—Contracts for the first quarter, which promise to be equal in volume to those of the quarter now closing, are better than 80 per cent closed. Makers continue to operate at 75 per cent of capacity. For mill prices see page 1769.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to $\frac{1}{2} \times 4$ in., 50 and 5 per cent off; larger sizes, 50 and 5 off; carriage bolts up to $\frac{1}{2} \times 4$ in., 47 $\frac{1}{2}$ off; larger sizes, 47 $\frac{1}{2}$ off; hot-pressed nuts, square, tapped or blank, \$3.25 off; hot-pressed nuts, hexagon, tapped or blank, \$3.75 off; coach or lag screws, 55 and 5 per cent off.

Reinforcing Bars.—Contractors are still placing a large amount of reinforcing steel. Awards are unusual in aggregate tonnage for this time of the year. Fresh inquiries are still coming up at a fair rate and bar benders are looking forward to maintaining, throughout the winter, the present rate of shop operations, which is said to be about 50 per cent of what it was during the summer and fall. The zoning law of Evanston, Ill., has been upheld, at least temporarily, and the Northwestern University stadium will be 85 ft. high in two decks instead of a three-deck structure, as originally planned. Shipments from warehouses are said to be fairly well maintained and order books will go into the new year well filled. Billet steel reinforcing bars are steady at 2.60c., Chicago warehouse.

New lettings and fresh pending work are shown on page 1780.

Coke.—This commodity is unchanged at \$10.50, ovens, or \$11, delivered in the Chicago switching district.

Old Material.—The market continues weak, with dealers apparently at a loss to gage it and buyers taking scrap only when prices suit their fancy. Dealers have been making a strenuous effort to hold back shipments in order to avoid selling short or placing in their yards any material besides mixed scrap, which must be sorted. Heavy melting steel is quiet and will bring not over \$15.50 per gross ton. A small tonnage of hydraulic sheets was sold at \$13.50, delivered, and 400 tons of No. 1 railroad wrought brought \$13.30 per net ton on track, or \$13.80, delivered. The Western Electric Co. is reported as having sold 1750 tons of compressed scrap. Railroad lists are light and cover only a few carloads each.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton	
Iron rails	\$18.00 to \$18.50
Cast iron car wheels	18.00 to 18.50
Relaying rails, 56 lb. to 60 lb.	25.00 to 26.00
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Forged steel car wheels	18.50 to 19.00
Railroad tires, charging box size	19.00 to 19.50
Railroad leaf springs, cut apart	19.25 to 19.75
Rails for rolling	18.00 to 18.50
Steel rails, less than 3 ft.	19.00 to 19.50
Heavy melting steel	15.25 to 15.50
Frogs, switches and guards, cut apart	17.25 to 17.75
Shoveling steel	15.25 to 15.50
Drop forge flashings	12.00 to 12.50
Hydraulic compressed sheets	13.50 to 14.00
Axle turnings	15.00 to 15.50
Steel angle bars	18.25 to 18.75
Steel knuckles and couplers	18.00 to 18.50
Coil springs	19.00 to 19.50
Low phosph. punchings	17.50 to 18.00
Machine shop turnings	9.25 to 9.75
Cast borings	12.50 to 12.75
Short shoveling turnings	12.25 to 12.75
Railroad malleable	18.00 to 18.50
Agricultural malleable	16.50 to 17.00

Per Net Ton	
Iron angle and splice bars	16.50 to 17.00
Iron arch bars and transoms	21.00 to 21.50
Iron car axles	26.00 to 26.50
Steel car axles	18.00 to 18.50
No. 1 busheling	12.25 to 12.75
No. 2 busheling	9.25 to 9.75
Pipes and flues	11.00 to 11.50
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	13.75 to 14.00
No. 1 machinery cast	17.00 to 17.50
No. 1 railroad cast	16.25 to 16.75
No. 1 agricultural cast	16.25 to 16.75
Locomotive tires, smooth	16.50 to 17.00
Stove plate	14.75 to 15.25
Grate bars	14.00 to 14.50
Brake shoes	13.50 to 14.00

Scrap Remains Quiet But Steady at Detroit

DETROIT, Dec. 22.—The lists of waste material for January delivery that have so far been offered by the largest producers show that these manufacturers have a high production schedule for the first month of the year. While the market is fairly quiet, there has not been any real breaks, and current orders are absorbing this month's output. General opinion seems to be that prices will remain about on the present basis for some little time in the future.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	\$14.75 to \$15.25
Borings and short turnings	11.50 to 12.00
Long turnings	10.75 to 11.25
No. 1 machinery cast	17.00 to 18.00
Automobile cast	22.00 to 24.00
Hydraulic compressed	12.75 to 14.25
Stove plate	12.50 to 14.50
No. 1 busheling	12.25 to 12.75
Sheet clippings	9.50 to 10.00
Flashings	12.25 to 12.75

Cincinnati

Water Shipments of Steel and Pig Iron to Evansville—New Coke Rates

CINCINNATI, Dec. 22.—The proximity of the holiday season has resulted in a recession in pig iron buying, and consumer interest is at a low point. Foundry iron in the Ironton district remains at \$21, base furnace, but Tennessee iron has advanced to \$22, base Birmingham. All Alabama merchant furnaces, with the exception of one which has a small tonnage of high silicon grades to sell, are temporarily out of the market. While no orders for second quarter have been booked, it is understood that at least one Southern producer will take business for that delivery at \$22.50, base Birmingham. Only a few sales of silvery iron have been made, and prices continue firm, with 8 per cent bringing \$29.50, f.o.b. Jackson. The movement of malleable iron is negligible, with quotations steady at \$21, Ironton. It is reported that an Ironton furnace, which is equipped to ship iron by water, recently sold 2000 tons of foundry grades in Evansville, Ind., for first quarter delivery at approximately \$1 under the delivered price quoted by Chicago producers. A local broker has disposed of 1000 tons of Southern iron to a Tennessee melter. Inquiry is light and few sales of consequence are expected in the next two weeks. The American Rolling Mill Co. will blow in its second furnace at Ashland, Ky., on basic iron about Jan. 1.

Based on freight rates of \$3.69 from Birmingham and \$2.27 from Ironton, we quote f.o.b. Cincinnati:	
Alabama fdy., sil. 1.75 to 2.25 (base)	\$25.69
Alabama fdy., sil. 2.25 to 2.75...	26.19
Tennessee fdy., sil. 1.75 to 2.25...	25.69
Southern Ohio silvery, 8 per cent 2.25	31.77
Southern Ohio fdy., sil. 1.75 to 2.25	\$23.27 to 23.77
South'n Ohio, malleable (nominal)	23.27

Finished Material.—A shipment of 5000 tons of bars, shapes and plates down the Ohio River from Pittsburgh to Evansville, Ind., has called attention to the fact that Pittsburgh producers who have facilities for barge transportation are now able to invade territory which previously has been served by Chicago mills. Orders and specifications for bars, shapes and plates are slightly ahead of those for the corresponding period in November. A leading seller states that bar tonnage the past week came from more diverse sources than at any time since September, thus reflecting a healthy industrial condition. The Big Four railroad is inquiring for 1600 tons of plates and about 200 tons of bars and shapes to cover its first quarter requirements. It is understood that a Chicago producer will supply 1700 tons of plain material for a gas holder to be erected at Long Beach, L. I., N. Y., by the Stacey Mfg. Co. Bars are firm at 2c. to 2.10c., Pittsburgh, with the latter price prevailing only in a few instances. Quotations on shapes range from 2c. to 2.10c., Pittsburgh, with the latter figure gaining in strength. Plates are selling at 1.90c. to 2c., Pittsburgh, but large consumers are covered through this month at lower prices. The demand for sheets is satisfactory, and in some cases buyers are calling for tonnages which were scheduled for delivery the last week in December and the first week in January. While consumers are in no haste to fill their first quarter needs, there is a moderate flow of new business. Black sheets are steady at 3.35c., Pittsburgh, and galvanized at 4.60c., Pittsburgh. Although blue annealed sheets have been offered at as low as 2.40c., most sales are being made at 2.50c., Pittsburgh. The activity in automobile sheets has tapered off, but prices are strong at 4.50c., Pittsburgh. Cincinnati and Louisville jobbers have been taking a considerable quantity of common wire nails and wire goods, most of which is being shipped by water from Ironton, Ohio. Prices remain the same, with common wire nails bringing \$2.65 per keg, Pittsburgh or Ironton, and plain wire \$2.50 per 100 lb., Pittsburgh or Ironton. Local fabricators state that the outlook for building in the first half of 1926 is promising and that they are now bidding on a number of sizable projects.

Reinforcing Bars.—Although several important

projects are pending, no lettings of consequence are expected until next month. Prices are strong, with new billet bars bringing 2c., Cleveland, and rail steel bars 1.90c., mill.

Warehouse Business.—Orders for structural steel and tubing in the first 20 days of December have slightly exceeded those in the corresponding period last month. Demand for bars, sheets and cold-rolled products has been well sustained. Prices are firm and jobbers do not look for early changes in quotations.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4c. to 4.25c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds and hexagons, 3.85c.; squares, 4.35c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.10c. to 4.30c.; No. 28 galvanized sheets, 5.25c. to 5.40c.; No. 9 annealed wire, \$3 per 100 lb.; common wire nails, \$2.95 per keg base; cement coated nails, \$2.25 per keg; chain, \$7.55 per 100 lb. base; large round head rivets, \$3.75 base; small rivets, 65 per cent off list. Boiler tubes: prices net per 100 ft. lap-welded steel tubes, 2-in., \$18; 4-in., \$38; seamless, 2-in., \$19; 4-in., \$39.

Coke.—Shipments of by-product foundry grades are holding up well, while domestic coke is moderately active. It is expected that the prices of by-product foundry and domestic coke, respectively, which are now \$10.64 and \$8.64, delivered Cincinnati, will remain unchanged during January. A sale of 500 tons of Connellsville foundry coke is noted. Announcement has been made that the freight rate from New River ovens to Cincinnati will be reduced from \$2.90 to \$2.59 a ton, effective Jan. 1. A new rate of \$2.37, as against \$2.65 a ton, from the New River district to Louisville will be established at the same time.

Based on freight rates of \$2.14 from Ashland, Ky., \$3.53 from Connellsville, \$2.90 from New River ovens and \$2.59 from Wise County ovens, we quote f.o.b. Cincinnati: Connellsville foundry, \$8.53 to \$9.53; Wise County foundry, \$8.09 to \$9.59; New River foundry, \$9.90 to \$11.40; by-product foundry, \$10.64.

Old Material.—Activity in the scrap market is lagging. Mills are postponing further purchases until January, while in some cases shipments on contract are being held up temporarily. Prices have not changed, although they show signs of weakness.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton		
Heavy melting steel	\$14.50 to	\$15.00
Scrap rails for melting	14.50 to	15.00
Short rails	18.50 to	19.00
Relaying rails	27.50 to	28.00
Rails for rolling	15.50 to	16.00
Old car wheels	14.00 to	14.50
No. 1 locomotive tires	17.00 to	17.50
Railroad malleable	16.00 to	16.50
Agricultural malleable	15.50 to	16.00
Loose sheet clippings	9.50 to	10.00
Champion bundled sheets	11.50 to	12.00

Per Net Ton		
Cast iron borings	9.50 to	10.00
Machine shop turnings	8.00 to	8.50
No. 1 machinery cast	20.00 to	20.50
No. 1 railroad cast	16.00 to	16.50
Iron axles	23.00 to	23.50
No. 1 railroad wrought	12.00 to	12.50
Pipes and flues	9.50 to	10.00
No. 1 busheling	11.00 to	11.50
Mixed busheling	9.50 to	10.00
Burnt cast	10.00 to	10.50
Stove plate	11.00 to	11.50
Brake shoes	11.00 to	11.50

Buffalo

Extending Deliveries on Steel—Little Suspension of Pig Iron Shipments

BUFFALO, Dec. 22.—Pig iron buying has simmered down to the purchase of actual necessities, but the market is firm at \$21 to \$22, Buffalo. Furnace men are hopeful that the beginning of the year will see a resumption of the good business of the past two months. Inquiry is comparatively light, 3500 to 5000 tons, and for small lots. The requirements of a Depew melter for 2000 tons of basic are said to have been taken care of. Basic iron apparently ranges from \$20.50 to \$21, though lower than this may have been done. Furnaces which are well obligated against their capacity are offering foundry iron at \$22; others are asking \$21 for foundry and malleable and \$21.50 to \$22 for Bes-

sember. Producers say they have heard little of the customary hold-ups in shipments, characteristic of the season of the year.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil.	1.75 to 2.25	\$21.00 to \$22.00
No. 2X foundry, sil.	2.25 to 2.75	21.50 to 22.50
No. 1 foundry, sil.	2.75 to 3.25	22.50 to 23.50
Malleable, sil.	up to 2.25	21.00 to 22.00
Basic		20.50 to 21.00
Lake Superior charcoal		29.28

Finished Iron and Steel.—Deliveries are extending and buyers are being forced to consider forward buying for the first time in many months. Bars are strong at 2.265c., base Buffalo, and shapes are being offered at 2.265c., although on large and attractive tonnages 2.165c. can still be done. There is somewhat of a revival in demand for plates, which are held at 2.165c. Plates are no longer to be had at 2.115c., base Buffalo. Sheets are very steady with good production indicated for months ahead. Prices are about 3.35c., base Pittsburgh, for black; 4.60c. for galvanized and 2.50c. for blue annealed. Warehouse business is satisfactory. Makers of semi-finished steel report the market strong and indicating a shortage during the first half. Billets and sheet bars are strong at \$35 and \$36, Youngstown or Pittsburgh, respectively.

Warehouse prices are being quoted as follows: Steel bars, 3.30c.; steel shapes, 3.40c.; steel plates, 3.40c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized, 5.75c.; cold-rolled shapes, 4.45c.; cold-rolled rounds, 3.95c.; wire nails, 3.90c.; black wire, 3.90c.

Old Material.—The market shows signs of further improvement, but this has not yet been translated into buying. Shipments on orders are going through briskly. Youngstown has offered and has paid Buffalo shippers \$20, Youngstown, for heavy melting steel, and the demand for turnings and borings from that section is rather active. The market for both is about \$13.50, Buffalo. Cleveland is said to have paid \$15, delivered, for machine shop turnings and Pittsburgh \$15 to \$15.50, delivered. Dealers are confident that some important buying will be done by the mills before the first of the year. Some low phosphorus sales have taken place at \$21 to \$22, but generally speaking the specialty market is dull. One steel mill continues to offer no more than \$18 for heavy melting steel and to obtain an influx of small lots at that price. Dealers' stocks are thinning out.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	\$18.50 to \$19.00
Low phosphorus	20.00 to 21.00
No. 1 railroad wrought	16.50 to 17.00
Car wheels	17.50 to 18.00
Machine shop turnings	13.00 to 13.50
Mixed borings and turnings	13.50 to 14.00
Cast iron borings	13.00 to 13.50
No. 1 busheling	16.50 to 17.50
Stove plate	15.00
Grate bars	14.50 to 15.00
Hand bundled sheets	13.00 to 13.50
Hydraulic compressed	16.50 to 17.50
No. 1 machinery cast	17.50 to 18.00
Railroad malleable	20.00 to 21.00
No. 1 cast scrap	17.50 to 18.00
Iron axles	26.00 to 27.00
Steel axles	20.00 to 21.00

Birmingham

Two Blast Furnaces to Resume in January —Heavy Forward Commitments

BIRMINGHAM, Dec. 22.—Notwithstanding a holiday lull in buying, the pig iron market remains strong. Although new business during the past week was confined to a few spot sales, deliveries show no signs of diminishing. Furnaces have been shipping iron ahead of schedule in a few instances, and are making further inroads into their surplus stocks. It is hardly probable that the accumulation in the holiday period will amount to much. Prices are being maintained at \$22 to \$23, base Birmingham, with only one of the independent producers of foundry iron manifesting interest in business at under \$23. Little iron is reported sold for second quarter delivery, though inquiries indicate large needs for that period. Iron production is being steadily maintained and output will increase in January, when

two blast furnaces will resume operations. A number of inquiries for lots ranging from 300 to 500 tons each, have been received from the Middle West. Various consumers find the business outlook for the coming year bright, and the larger industries have orders in hand and in prospect which will call for much iron.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, sil.	1.75 to 2.25	\$22.00 to \$23.00
No. 1 foundry, sil.	2.25 to 2.75	22.50 to 23.50
Basic		22.00
Charcoal, warm blast		30.00 to 32.00

Rolled Steel.—Steel mills, fabricating shops and welding plants in this district have large unfilled obligations. Railroad business placed with the Tennessee Coal, Iron & Railroad Co. calls for a large tonnage, and demands from other sources are large in the aggregate. The Gulf States Steel Co. expects to have its new bar mill finished by March 15. The smallest, as well as the larger structural steel fabricators, have commitments which warrant full operations for a considerable period. Structural demand from Florida remains heavy, and shipments to that State, thanks to improved railroad service, are encountering less delay. Plates and shapes are still quoted on 2.05c. to 2.15c., base Birmingham, and soft steel bars at 2.15c. to 2.25c.

Cast Iron Pipe.—Little time will be lost this week in pressure pipe plants, so that shipments on contracts will not be materially affected. The outlook for 1926 is regarded as promising. Winter buying of pipe is up to all expectations and producers will go into the spring with large tonnages to fill.

Coke.—Steady coke production is in prospect for several months to come. Prices on foundry coke range from \$5.75 to \$6, Birmingham, with the higher price ruling on spot business. Iron and steel producers have little surplus coke to offer on the open market.

Old Material.—Contracts recently closed call for a large tonnage of scrap for delivery over the next three months. Heavy melting steel is still holding to \$14 per ton, and much of this product is being melted. Cast scrap is also in demand. With bright prospects in the cast iron pipe and steel markets, sentiment in the old material trade is optimistic.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	\$15.00 to \$16.00
Heavy melting steel	14.00 to 14.50
Railroad wrought	13.00 to 13.50
Steel axles	19.00 to 20.00
Iron axles	18.00 to 19.00
Steel rails	14.00 to 14.50
No. 1 cast	17.00 to 17.50
Tramcar wheels	17.00 to 17.50
Car wheels	16.00 to 16.50
Stove plate	14.00 to 14.50
Machine shop turnings	8.00 to 8.50
Cast iron borings	8.00 to 8.50
Rails for rolling	17.50 to 18.00

Toronto

Canadian Output of Iron and Steel Sags —Pig Iron Advance Checked by Imports

TORONTO, ONT., Dec. 22.—The production of pig iron in Canada for the month of November totaled 68,535 gross tons, a decline of 7 per cent from the 74,013 tons reported for the previous month. While November's output was slightly less than the highest monthly record for the year established in October, it was about 21,000 tons over the average monthly production for 1925. Pig iron made by the British Empire Steel Corporation, Sydney, N. S., accounted for 42 per cent of the November total, the balance having been produced in Ontario. By grades the output included 41,386 tons of basic and 25,602 tons of foundry iron and 1547 tons of malleable iron. Of the total, 59 per cent was made for the further use of producing companies and the remainder, or 41 per cent, was intended for sale. Two blast furnaces were blown out during the month, one at Sydney, N. S., and one at Sault Ste. Marie, Ont., leaving five active stacks as follows: British Empire Steel Corporation, Sydney, N. S., two; Steel Co. of Canada, Ltd., Hamilton, Ont., two, and the Algoma Steel Corporation, Sault Ste.

Cincinnati

Water Shipments of Steel and Pig Iron to Evansville—New Coke Rates

CINCINNATI, Dec. 22.—The proximity of the holiday season has resulted in a recession in pig iron buying, and consumer interest is at a low point. Foundry iron in the Ironton district remains at \$21, base furnace, but Tennessee iron has advanced to \$22, base Birmingham. All Alabama merchant furnaces, with the exception of one which has a small tonnage of high silicon grades to sell, are temporarily out of the market. While no orders for second quarter have been booked, it is understood that at least one Southern producer will take business for that delivery at \$22.50, base Birmingham. Only a few sales of silvery iron have been made, and prices continue firm, with 8 per cent bringing \$29.50, f.o.b. Jackson. The movement of malleable iron is negligible, with quotations steady at \$21, Ironton. It is reported that an Ironton furnace, which is equipped to ship iron by water, recently sold 2000 tons of foundry grades in Evansville, Ind., for first quarter delivery at approximately \$1 under the delivered price quoted by Chicago producers. A local broker has disposed of 1000 tons of Southern iron to a Tennessee melter. Inquiry is light and few sales of consequence are expected in the next two weeks. The American Rolling Mill Co. will blow in its second furnace at Ashland, Ky., on basic iron about Jan. 1.

Based on freight rates of \$3.69 from Birmingham and \$2.27 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	\$25.69
Alabama fdy., sil. 2.25 to 2.75...	26.19
Tennessee fdy., sil. 1.75 to 2.25...	25.69
Southern Ohio silvery, 8 per cent 2.25	31.77
South'n Ohio fdy., sil. 1.75 to 2.25	\$23.27 to 23.77
South'n Ohio, malleable (nominal)	23.27

Finished Material.—A shipment of 5000 tons of bars, shapes and plates down the Ohio River from Pittsburgh to Evansville, Ind., has called attention to the fact that Pittsburgh producers who have facilities for barge transportation are now able to invade territory which previously has been served by Chicago mills. Orders and specifications for bars, shapes and plates are slightly ahead of those for the corresponding period in November. A leading seller states that bar tonnage the past week came from more diverse sources than at any time since September, thus reflecting a healthy industrial condition. The Big Four railroad is inquiring for 1600 tons of plates and about 200 tons of bars and shapes to cover its first quarter requirements. It is understood that a Chicago producer will supply 1700 tons of plain material for a gas holder to be erected at Long Beach, L. I., N. Y., by the Stacey Mfg. Co. Bars are firm at 2c. to 2.10c., Pittsburgh, with the latter price prevailing only in a few instances. Quotations on shapes range from 2c. to 2.10c., Pittsburgh, with the latter figure gaining in strength. Plates are selling at 1.90c. to 2c., Pittsburgh, but large consumers are covered through this month at lower prices. The demand for sheets is satisfactory, and in some cases buyers are calling for tonnages which were scheduled for delivery the last week in December and the first week in January. While consumers are in no haste to fill their first quarter needs, there is a moderate flow of new business. Black sheets are steady at 3.35c., Pittsburgh, and galvanized at 4.60c., Pittsburgh. Although blue annealed sheets have been offered at as low as 2.40c., most sales are being made at 2.50c., Pittsburgh. The activity in automobile sheets has tapered off, but prices are strong at 4.50c., Pittsburgh. Cincinnati and Louisville jobbers have been taking a considerable quantity of common wire nails and wire goods, most of which is being shipped by water from Ironton, Ohio. Prices remain the same, with common wire nails bringing \$2.65 per keg, Pittsburgh or Ironton, and plain wire \$2.50 per 100 lb., Pittsburgh or Ironton. Local fabricators state that the outlook for building in the first half of 1926 is promising and that they are now bidding on a number of sizable projects.

Reinforcing Bars.—Although several important

projects are pending, no lettings of consequence are expected until next month. Prices are strong, with new billet bars bringing 2c., Cleveland, and rail steel bars 1.90c., mill.

Warehouse Business.—Orders for structural steel and tubing in the first 20 days of December have slightly exceeded those in the corresponding period last month. Demand for bars, sheets and cold-rolled products has been well sustained. Prices are firm and jobbers do not look for early changes in quotations.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4c. to 4.25c.; cold-bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds and hexagons, 3.85c.; squares, 4.35c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.10c. to 4.30c.; No. 28 galvanized sheets, 5.25c. to 5.40c.; No. 9 annealed wire, \$3 per 100 lb.; common wire nails, \$2.95 per keg base; cement coated nails, \$2.25 per keg; chain, \$7.55 per 100 lb. base; large round head rivets, \$3.75 base; small rivets, 65 per cent off list. Boiler tubes: prices net per 100 ft. lap-welded steel tubes, 2-in., \$18; 4-in., \$38; seamless, 2-in., \$19; 4-in., \$39.

Coke.—Shipments of by-product foundry grades are holding up well, while domestic coke is moderately active. It is expected that the prices of by-product foundry and domestic coke, respectively, which are now \$10.64 and \$8.64, delivered Cincinnati, will remain unchanged during January. A sale of 500 tons of Connellsville foundry coke is noted. Announcement has been made that the freight rate from New River ovens to Cincinnati will be reduced from \$2.90 to \$2.59 a ton, effective Jan. 1. A new rate of \$2.37, as against \$2.65 a ton, from the New River district to Louisville will be established at the same time.

Based on freight rates of \$2.14 from Ashland, Ky., \$3.53 from Connellsville, \$2.90 from New River ovens and \$2.59 from Wise County ovens, we quote f.o.b. Cincinnati: Connellsville foundry, \$8.53 to \$9.53; Wise County foundry, \$8.09 to \$9.59; New River foundry, \$9.90 to \$11.40; by-product foundry, \$10.64.

Old Material.—Activity in the scrap market is lagging. Mills are postponing further purchases until January, while in some cases shipments on contract are being held up temporarily. Prices have not changed, although they show signs of weakness.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel.....	\$14.50 to \$15.00
Scrap rails for melting.....	14.50 to 15.00
Short rails.....	18.50 to 19.00
Relaying rails.....	27.50 to 28.00
Rails for rolling.....	15.50 to 16.00
Old car wheels.....	14.00 to 14.50
No. 1 locomotive tires.....	17.00 to 17.50
Railroad malleable.....	16.00 to 16.50
Agricultural malleable.....	15.50 to 16.00
Loose sheet clippings.....	9.50 to 10.00
Champion bundled sheets.....	11.50 to 12.00

Per Net Ton	
Cast iron borings.....	9.50 to 10.00
Machine shop turnings.....	8.00 to 8.50
No. 1 machinery cast.....	20.00 to 20.50
No. 1 railroad cast.....	16.00 to 16.50
Iron axles.....	23.00 to 23.50
No. 1 railroad wrought.....	12.00 to 12.50
Pipes and flues.....	9.50 to 10.00
No. 1 busheling.....	11.00 to 11.50
Mixed busheling.....	9.50 to 10.00
Burnt cast.....	10.00 to 10.50
Stove plate.....	11.00 to 11.50
Brake shoes.....	11.00 to 11.50

Buffalo

Extending Deliveries on Steel—Little Suspension of Pig Iron Shipments

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sem. Producers say they have heard little of the customary hold-ups in shipments, characteristic of the season of the year.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sll. 1.75 to 2.25....	\$21.00 to \$22.00
No. 2X foundry, sll. 2.25 to 2.75....	21.50 to 22.50
No. 1 foundry, sll. 2.75 to 3.25....	22.50 to 23.50
Malleable, sll. up to 2.25....	21.00 to 22.00
Basic.....	20.50 to 21.00
Lake Superior charcoal.....	29.28

Finished Iron and Steel.—Deliveries are extending and buyers are being forced to consider forward buying for the first time in many months. Bars are strong at 2.265c., base Buffalo, and shapes are being offered at 2.265c., although on large and attractive tonnages 2.165c. can still be done. There is somewhat of a revival in demand for plates, which are held at 2.165c. Plates are no longer to be had at 2.115c., base Buffalo. Sheets are very steady with good production indicated for months ahead. Prices are about 3.35c., base Pittsburgh, for black; 4.60c. for galvanized and 2.50c. for blue annealed. Warehouse business is satisfactory. Makers of semi-finished steel report the market strong and indicating a shortage during the first half. Billets and sheet bars are strong at \$35 and \$36, Youngstown or Pittsburgh, respectively.

Warehouse prices are being quoted as follows: Steel bars, 3.30c.; steel shapes, 3.40c.; steel plates, 3.40c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized, 5.75c.; cold-rolled shapes, 4.45c.; cold-rolled rounds, 3.95c.; wire nails, 3.90c.; black wire, 3.90c.

Old Material.—The market shows signs of further improvement, but this has not yet been translated into buying. Shipments on orders are going through briskly. Youngstown has offered and has paid Buffalo shippers \$20, Youngstown, for heavy melting steel, and the demand for turnings and borings from that section is rather active. The market for both is about \$13.50, Buffalo. Cleveland is said to have paid \$15, delivered, for machine shop turnings and Pittsburgh \$15 to \$15.50, delivered. Dealers are confident that some important buying will be done by the mills before the first of the year. Some low phosphorus sales have taken place at \$21 to \$22, but generally speaking the specialty market is dull. One steel mill continues to offer no more than \$18 for heavy melting steel and to obtain an influx of small lots at that price. Dealers' stocks are thinning out.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel.....	\$18.50 to \$19.00
Low phosphorus.....	20.00 to 21.00
No. 1 railroad wrought.....	16.50 to 17.00
Car wheels.....	17.50 to 18.00
Machine shop turnings.....	13.00 to 13.50
Mixed borings and turnings.....	13.50 to 14.00
Cast iron borings.....	13.00 to 13.50
No. 1 busheling.....	16.50 to 17.50
Stove plate.....	15.00
Grate bars.....	14.50 to 15.00
Hand bundled sheets.....	13.00 to 13.50
Hydraulic compressed.....	16.50 to 17.50
No. 1 machinery cast.....	17.50 to 18.00
Railroad malleable.....	20.00 to 21.00
No. 1 cast scrap.....	17.50 to 18.00
Iron axles.....	26.00 to 27.00
Steel axles.....	20.00 to 21.00

Birmingham

Two Blast Furnaces to Resume in January —Heavy Forward Commitments

BIRMINGHAM, Dec. 22.—Notwithstanding a holiday lull in buying, the pig iron market remains strong. Although new business during the past week was confined to a few spot sales, deliveries show no signs of diminishing. Furnaces have been shipping iron ahead of schedule in a few instances, and are making further inroads into their surplus stocks. It is hardly probable that the accumulation in the holiday period will amount to much. Prices are being maintained at \$22 to \$23, base Birmingham, with only one of the independent producers of foundry iron manifesting interest in business at under \$23. Little iron is reported sold for second quarter delivery, though inquiries indicate large needs for that period. Iron production is being steadily maintained and output will increase in January, when

two blast furnaces will resume operations. A number of inquiries for lots ranging from 300 to 500 tons each, have been received from the Middle West. Various consumers find the business outlook for the coming year bright, and the larger industries have orders in hand and in prospect which will call for much iron.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sll....	\$22.00 to \$23.00
No. 1 foundry, 2.25 to 2.75 sll....	22.50 to 23.50
Basic.....	22.00
Charcoal, warm blast.....	30.00 to 32.00

Rolled Steel.—Steel mills, fabricating shops and welding plants in this district have large unfilled obligations. Railroad business placed with the Tennessee Coal, Iron & Railroad Co. calls for a large tonnage, and demands from other sources are large in the aggregate. The Gulf States Steel Co. expects to have its new bar mill finished by March 15. The smallest, as well as the larger structural steel fabricators, have commitments which warrant full operations for a considerable period. Structural demand from Florida remains heavy, and shipments to that State, thanks to improved railroad service, are encountering less delay. Plates and shapes are still quoted on 2.05c. to 2.15c., base Birmingham, and soft steel bars at 2.15c. to 2.25c.

Cast Iron Pipe.—Little time will be lost this week in pressure pipe plants, so that shipments on contracts will not be materially affected. The outlook for 1926 is regarded as promising. Winter buying of pipe is up to all expectations and producers will go into the spring with large tonnages to fill.

Coke.—Steady coke production is in prospect for several months to come. Prices on foundry coke range from \$5.75 to \$6, Birmingham, with the higher price ruling on spot business. Iron and steel producers have little surplus coke to offer on the open market.

Old Material.—Contracts recently closed call for a large tonnage of scrap for delivery over the next three months. Heavy melting steel is still holding to \$14 per ton, and much of this product is being melted. Cast scrap is also in demand. With bright prospects in the cast iron pipe and steel markets, sentiment in the old material trade is optimistic.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel.....	14.00 to 14.50
Railroad wrought.....	13.00 to 13.50
Steel axles.....	19.00 to 20.00
Iron axles.....	18.00 to 19.00
Steel rails.....	14.00 to 14.50
No. 1 cast.....	17.00 to 17.50
Tramcar wheels.....	17.00 to 17.50
Car wheels.....	16.00 to 16.50
Stove plate.....	14.00 to 14.50
Machine shop turnings.....	8.00 to 8.50
Cast iron borings.....	8.00 to 8.50
Rails for rolling.....	17.50 to 18.00

Toronto

Canadian Output of Iron and Steel Sags —Pig Iron Advance Checked by Imports

TORONTO, ONT., Dec. 22.—The production of pig iron in Canada for the month of November totaled 68,535 gross tons, a decline of 7 per cent from the 74,013 tons reported for the previous month. While November's output was slightly less than the highest monthly record for the year established in October, it was about 21,000 tons over the average monthly production for 1925. Pig iron made by the British Empire Steel Corporation, Sydney, N. S., accounted for 42 per cent of the November total, the balance having been produced in Ontario. By grades the output included 41,386 tons of basic and 25,602 tons of foundry iron and 1547 tons of malleable iron. Of the total, 59 per cent was made for the further use of producing companies and the remainder, or 41 per cent, was intended for sale. Two blast furnaces were blown out during the month, one at Sydney, N. S., and one at Sault Ste. Marie, Ont., leaving five active stacks as follows: British Empire Steel Corporation, Sydney, N. S., two; Steel Co. of Canada, Ltd., Hamilton, Ont., two, and the Algoma Steel Corporation, Sault Ste.

Marie, Ont., one. It has been reported from Sault Ste. Marie, Ont., during the past week that the Algoma Steel Corporation will blow in two additional furnaces to supply basic iron for its rolling mills.

With the announcement of higher pig iron prices in November many melters hastened to cover their needs in foundry iron both for the remainder of the year and for first quarter. Despite the fact that producers have experienced a better market demand during the past six weeks, the daily melt has remained unchanged with foundries, in most cases not exceeding 50 per cent of capacity. Advances in pig iron in November amounted to \$1.50 per ton on all grades for present quarter delivery and \$2 per ton for first quarter. Prevailing prices at Toronto are as follows: No. 1 foundry (2.25 to 2.75 per cent silicon), \$26.35; malleable, \$26.35; No. 2 foundry (1.75 to 2.25 per cent silicon), \$25.85. Because of strong European competition, the differential between No. 1 and No. 2 foundry iron in the Montreal market has been dropped, with producers quoting \$28.75, Montreal, on all grades of iron, as compared with \$27.25 in October. It is expected that the closing of navigation on the St. Lawrence will result in the restoration of the 50c. differential.

The production of steel ingots and castings in Canada for the month of November reflected the lower output of pig iron by falling to 73,205 gross tons which, although 33 per cent under the 108,868 tons of October, was about double the 37,094 tons made in September. For the 11 months ended with November the cumulative production of steel ingots and castings was 690,342 tons, an increase of 11 per cent over the 624,451 tons made during the same period of 1924. This year's output to date was composed of 663,059 tons basic open hearth steel ingots and 10,097 tons of alloy steel ingots, 8307 tons basic open hearth steel castings, 1604 tons of converter castings and 17,186 tons of electric castings.

The closing down of the rail mill and other departments at the works of the Algoma Steel Corporation, Sault Ste. Marie, Ont., early in November is given as one of the main reasons for the falling off in the production of steel ingots. That company completed a 35,000-ton rail order for the Canadian Pacific Railway and while it still has orders for some 35,000 tons of rails for the Canadian National Railways, these will not be rolled until next spring. The British Empire Steel Corporation, Sydney, N. S., reports production at close to capacity. The Steel Co. of Canada, Ltd., Hamilton, Ont., is now running at upward of 75 per cent capacity.

St. Louis

Railroads Sell Scrap at Lower Prices— Pig Iron and Steel Quiet

ST. LOUIS, Dec. 22.—Sales of pig iron during the week amounted to only a few scattering carloads, and inquiries totaled about 2000 tons. However, melters are urging shipments against contracts, and mills in the district are planning to make Christmas the only day in which operations are suspended during the holiday period. Stove plants, on the other hand, have closed for the holidays. The bulk of pig iron business for first quarter has been placed, but there is a little buying still to be done. The market is strong because of the heavy bookings by furnaces. It is reported that for the first time in years, Tennessee iron is being shipped into the Birmingham district to meet the demand. The price of Southern iron has advanced, now ranging from \$22 to \$23.50, base Birmingham, the latter quotation being nominal.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sll. 1.75 to 2.25..	\$25.66
Northern malleable, sll. 1.75 to 2.25 ..	25.66
Basic ..	25.66
Southern fdy., sll. 1.75 to 2.25 ..	\$26.42 to 27.92
Granite City iron, sll. 1.75 to 2.25 ..	24.31 to 24.81

Finished Iron and Steel.—The usual holiday and preinventory lull prevails in the market. Since Aug. 1 the volume of business has been steady and satisfactory and free from speculation. No new building projects are pending here.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.25c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, cold rolled, one pass, 4.60c.; galvanized sheets, No. 28, 5.70c.; black corrugated sheets, 4.65c.; galvanized, 5.75c.; cold-rolled rounds, shafting and screw stock, 3.75c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, $\frac{1}{8}$ in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 and 5 per cent; lag screws, 55 $\frac{1}{2}$ per cent; hot-pressed nuts, square, \$3.25; hexagon, blank or tapped, \$3.75 off list.

Coke.—Demand for both domestic and foundry grades of coke continues strong. A number of contracts for foundry coke were renewed during the week. The situation in domestic coke is being strengthened by lower stocks at ovens and in hands of dealers.

Old Material.—All of the railroads accepted lower prices for old materials offered last week, except the Wabash Railway, which withdrew its list of 3400 tons on account of low bids. The market is still weak, and while consumers cite inventory taking as an excuse for remaining out of the market, still they are willing to take on any "bargains" that are available. Dealers believe the market will be stronger after Jan. 1. A few items are lower this week, rails for rolling having declined \$1.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton		
Iron rails	\$14.50 to	\$15.00
Rails for rolling	18.25 to	18.75
Steel rails less than 3 ft.	19.25 to	19.75
Relaying rails, 60 lb. and under.	24.00 to	25.00
Relaying rails, 70 lb. and over.	30.00 to	31.00
Cast iron car wheels	18.00 to	18.50
Heavy melting steel	15.00 to	15.50
Heavy shoveling steel	15.00 to	15.50
Frogs, switches and guards cut apart	17.50 to	18.00
Railroad springs	19.00 to	19.50
Heavy axles and tire turnings	13.00 to	13.50
No. 1 locomotive tires	16.50 to	17.00
Per Net Ton		
Steel angle bars	15.00 to	15.50
Steel car axles	17.50 to	18.00
Iron car axles	24.00 to	24.50
Wrought iron bars and transoms	19.50 to	20.00
No. 1 railroad wrought	12.50 to	13.00
No. 2 railroad wrought	13.25 to	13.75
Cast iron borings	11.00 to	11.50
No. 1 busheling	11.50 to	12.00
No. 1 railroad cast	15.00 to	15.50
No. 1 machinery cast	17.00 to	17.50
Railroad malleable	14.50 to	15.00
Machine shop turnings	8.50 to	9.00
Bundled sheets	8.75 to	9.25

Boston

German Steel Offered at Low Prices— Large Gas Pipe Purchases

BOSTON, Dec. 22.—Pig iron sales here the past week probably ran close to 2000 tons, in car lots up to a few hundred tons, mostly car lots from Buffalo district and western Pennsylvania stocks. Buffalo district iron is still available at \$21, base furnace, and sales of No. 2X were made the past few days at \$26.41, delivered, but some furnaces are endeavoring to secure \$1 a ton more. Western Pennsylvania iron is selling, in most cases, at \$27.41, delivered, for No. 2 plain and No. 2X, or \$22.50, furnace. It is intimated that on desirable business 50c. a ton less can be done. Continental iron, ranging from 2.50 to 3 per cent silicon, is freely offered at \$21.25, on dock duty paid, and Scotch 4 per cent silicon iron is available at \$24, on dock duty paid. Quotations on other foreign irons are considerably higher and therefore largely nominal. Little is happening in eastern Pennsylvania, Virginia and Alabama iron. In fact, there is little suggestive of increased demand for any iron, as most melters have enough stock on hand or on order to last through January and February. Then too, there is a disposition on the part of foundries to await price developments on foreign iron. Again, the approaching blowing in of the Mystic

Iron Works and the Troy, N. Y., furnaces has considerable bearing on the attitude of New England foundries regarding future contracting.

We quote delivered prices on the basis of the latest sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25...	\$26.65
East. Penn., sil. 2.25 to 2.75...	27.15
Buffalo, sil. 1.75 to 2.25.....	\$25.91 to 26.91
Buffalo, sil. 2.25 to 2.75.....	26.41 to 27.41
Virginia, sil. 1.75 to 2.25.....	29.92
Virginia, sil. 2.25 to 2.75.....	30.42
Alabama, sil. 1.75 to 2.25.....	31.60 to 32.60
Alabama, sil. 2.25 to 2.75.....	32.10 to 33.10

Cast Iron Pipe.—R. D. Wood & Co. is reported to have been awarded 800 tons of 6-in. to 16-in. pipe by New Haven, Conn. Hartford, Conn., yesterday closed bids on a limited tonnage, but the award has not been made as yet. Two of the largest New England utility holding companies are reported to have placed privately 10,000 to 12,000 tons of gas pipe required next year. Prices quoted on domestic pipe follow: 4-in., \$60.10 a ton, delivered common Boston freight rate points; 6-in. to 16-in., \$56.10; 20-in. and larger, \$55.10. The usual extra of \$5 a ton is asked on Class A and gas pipe.

Finished Material.—The market for shapes is firmer in that mills, heretofore shading 1.90c., Pittsburgh base, or 2.265c., delivered, on attractive tonnages, have discontinued that practice. It is still possible to do 1.90c., Pittsburgh base, however, although the common asking price is 2c., or 2.365c., delivered. The ruling market for plates is unchanged at 1.965c. to 2.165c., delivered, and bars at 2c. to 2.10c., Pittsburgh base, or 2.365c. to 2.465c., delivered. German mills are actively offering Bessemer steel at the following prices, f.o.b. dock duty paid: bar steel, 1.70c.; reinforcing bars, 1.90c. to 1.95c.; hot-rolled bands, 1.95c.

Old Material—A slower movement of old material out of New England is noted. Buying for delivery in eastern and western Pennsylvania is virtually at a standstill, but because of the activity of steel mills in those territories, local scrap interests look for better demand shortly after the turn of the year. New England consumers of heavier materials are believed well covered through January and February, but will probably have to buy during the latter part of January for March consumption. There are indications that New England foundries will continue to supply machinery cast requirements from their local or nearby yards indefinitely. A majority of houses here quote heavy melting steel at \$12.50 to \$13, on cars shipping point, but the best some can do is \$12 to \$12.50. The market for pipe is all of 50c. a ton lower and at a standstill. Long bundled cotton ties have no call and are 25c. a ton lower, and an easier feeling prevails in the market for machine shop turnings. Otherwise little variation is found in old material prices.

The following prices are for gross ton lots delivered consuming points:

Textile cast	\$20.00 to \$20.50
No. 1 machinery cast.....	19.50 to 20.00
No. 2 machinery cast.....	15.50 to 16.50
Stove plate	14.50 to 15.00
Railroad malleable	19.50 to 20.00

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$12.00 to \$13.00
No. 1 railroad wrought	13.50 to 13.75
No. 1 yard wrought	12.50 to 13.00
Wrought pipe (1 in. in diameter, over 2 ft. long).....	11.50 to 12.00
Machine shop turnings.....	9.50 to 10.00
Cast iron borings, chemical	11.50 to 12.00
Cast iron borings, rolling mill- ings	9.50 to 10.00
Blast furnace borings and turn- ings	9.00 to 9.50
Forged scrap	10.00 to 10.50
Bundled skeleton, long	10.00 to 10.50
Forged flashings	10.00 to 10.50
Bundled cotton ties, long	9.00 to 9.50
Bundled cotton ties, short	10.00 to 10.50
Shafting	18.25 to 18.75
Street car axles	18.00 to 18.50
Rails for rerolling	13.50 to 14.00
Scrap rails	12.50 to 13.00

Coke.—For the first time since Connellsville district, Troy, N. Y., Scotch, Welsh and German cokes have been in active competition with Everett, Mass., and Providence, R. I., by-product domestic fuels, delivered prices on all brands are within a few cents of each other. All of these fuels have been in excellent demand as a result of more seasonable weather, but it is evident

that New England ovens are slowly yet gradually wearing down competition from imported fuel. Connellsville and Troy ovens find more active markets nearer at hand than New England; consequently competition from such fuel is spasmodic. So far as the foundry coke situation goes, there is little change. Both the New England Coal & Coke Co. and the Providence Gas Co. continue filling specifications against contracts at \$13 a ton, delivered within a \$3.10 freight rate zone. These companies are not pushed for foundry fuel and therefore are making prompt deliveries.

New York

Mill Backlogs Larger Than a Year Ago— Heavy Orders for Gas Pipe

NEW YORK, Dec. 22.—With the holidays and inventory taking close at hand, the pig iron market is quiet. Business closed during the past week consisted largely of small orders to supplement previous purchases and probably did not aggregate more than 5000 tons. In New England, however, the American Steel & Wire Co. is reported to have bought 6000 tons of low phosphorus for its Worcester plant. Pending inquiries total about 2500 tons. A New Jersey melter is in the market for 500 to 1000 tons of foundry iron for first quarter and a Connecticut user wants 500 tons of foundry for prompt shipment. The New York Central has put out an inquiry for 800 tons for first quarter shipment to Frankfort, N. Y., or Elkhart, Ind. In detail, it calls for 100 tons of charcoal, 150 tons of No. 1 X foundry, 50 tons of No. 2 X foundry, 300 tons of No. 2 plain, 50 tons of silvery and 150 tons of malleable. Foreign iron has not figured prominently in recent sales, although it is still offered at \$21.50 to \$22.50, duty paid port of entry. A surprisingly small amount of interest has been shown in second quarter requirements, but melters are expected to put out inquiries for that period early in the new year. The Port Henry, N. Y., furnace has not yet succeeded in getting into blast.

We quote delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25..	\$25.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	\$25.52 to 26.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	26.02 to 26.52
Buffalo, sil. 1.75 to 2.25.....	25.91 to 26.91
No. 2 Virginia, sil. 1.75 to 2.25..	29.54

Ferroalloys.—The paucity of contracts for ferromanganese for 1926 consumption is still much talked about. Only a few large consumers have contracted for their first quarter or first half needs, although usually this is a settled matter at this season. There is an inquiry for 200 tons before the market. New business and inquiries are confined to carload and small lots, evidently for filling-in purposes. The price situation is unchanged. Large consumers of spiegeleisen have covered their needs for the first quarter and first half of next year and the only new business is from those who need carload and small lots from time to time. There has been no change in prices. Contracts for next year's supplies of 50 per cent ferrosilicon and standard ferrochromium are reported as pretty well lined up.

Finished Iron and Steel.—With only six or seven business days until the end of the year, mill representatives are busily engaged in getting in customers' specifications on fourth quarter contracts. So far orders scheduled for rolling are probably about 5 per cent under the corresponding period of November, and backlogs are reported higher than was the case a year ago. The volume of new buying is very small, although some first quarter contracts have been closed within the week. In some lines, notably sheets, specifications are coming in quite freely, while in other lines con-

sumers are slower to take out their quotas, but will undoubtedly do so in full before the end of next week. Concessions on sheets are still being offered by some mills, the range on blue annealed now being 2.40c. to 2.50c., Pittsburgh, while some of the quotations on black and galvanized are also \$1 or \$2 a ton below the published quotations of other mills. Sales of plates by Eastern mills at 1.80c., Pittsburgh, are more numerous, but concessions of \$1 or \$2 a ton are still to be had on plates for prompt specification. The 1.80c. price is now declared to be firm for first quarter. Contracts for structural shapes with the larger trade are being made at 1.90c., Pittsburgh, and bar contracts are at 2c. Efforts to obtain \$2 higher a ton on bars and shapes for first quarter are unsuccessful except on small lots. Structural steel lettings and inquiries are in reduced volume, but the outlook is promising for a resumption of building contracting in January.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.44c.; plates, 2.04c. to 2.14c.; structural shapes, 2.24c. to 2.34c.; bar iron, 2.24c.

Warehouse Business.—Only a minimum of business is expected from now until after the first of the year by jobbers in this district. Despite efforts to strengthen prices, 4.35c. per lb. on black sheets and 5.35c. per lb. on galvanized continue obtainable without much difficulty. In an effort to reflect the recent mill advance on terne plates, most sellers in this district have made slight advances, but in the present inactivity of the market it is difficult to determine the permanency of the present schedule. Cold rolled shafting and screw stock is unchanged in the base price, but the quantity extras dropped about six months ago were re-established Dec. 15. These provide an extra of \$1 per 100 lb. on lots of less than 100 lb., 75c. per 100 lb. on lots of 100 to 299 lb. and 50c. per 100 lb. on lots of 200 to 499 lb. Prices on page 1794. We quote boiler tubes per 100 ft. as follows:

Lap welded steel tubes, 2-in., \$17.33; seamless steel, 2-in., \$20.24; charcoal iron, 2-in., \$25; 4-in., \$67.

Cast Iron Pipe.—Demand for water pipe has declined to the usual small volume at this season, but inquiries for gas pipe from private sources total many thousands of tons. The 7000 to 8000 tons asked for by the Consolidated Gas Co. of New York is reported still pending and a sizable tonnage is in the market from the Consolidated Gas Co. of Boston. The American Gas & Electric Co. inquiry for gas pipe is understood to be still pending. In water pipe, the 1000 tons for Providence, R. I., on which a German maker was low bidder, is stated to have been placed with the United States Cast Iron Pipe & Foundry Co. Makers of soil pipe are fairly well sold for the first two months of the first quarter, but there is some willingness on the part of sellers to protect buyers against price reductions and concessions from the present quoted discounts have not entirely disappeared.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$50.60 to \$52.60; 4-in. and 5-in., \$55.60 and \$57.60; 3-in., \$65.60 to \$67.60, with \$5 additional for Class A and gas pipe. Discounts both of Northern and of Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 42 1/2 to 43 1/4 per cent off list; heavy, 52 1/2 to 53 1/4 per cent off list.

Coke.—The market shows greater strength, particularly on spot shipments. While foundry coke on contracts is quoted as low as \$5.50 per net ton, spot shipments bring \$6 to \$6.50 per ton at ovens. Domestic sizes are stronger and quoted at \$8 to \$8.50 per ton. By-product is unchanged at \$11.52 per ton, delivered Newark and Jersey City, N. J.

Old Material.—Activity has declined considerably with the approach of the holidays, consumers seeking low inventories of material and being busy with repairs to equipment. Prices on most grades, however, are fairly firm and the few reductions in buying prices of eastern Pennsylvania consumers are not taken seriously by most brokers. A Phoenixville consumer of turnings, bundled skeleton and stove plate has dropped its offering prices to \$14.50 per ton, delivered, and \$14 is being offered by brokers without contracts while some material is still being bought at \$14.50 to fulfill contracts for this delivery. No. 1 heavy melting steel is quite

firm at \$16.75 to \$17.25 per ton, delivered eastern Pennsylvania, the offering prices of brokers. These quotations really represent the top of the present market and \$16.50 and \$17 per ton delivered is being offered but without bringing out much steel.

Buying prices per gross ton New York, follow:

Heavy melting steel (yard)	... \$11.75 to \$12.25
Heavy melting steel (railroad or equivalent)	13.50 to 14.00
Rails for rolling	14.50 to 15.00
Relaying rails, nominal	23.00 to 24.00
Steel car axles	21.00 to 21.50
Iron car axles	24.50 to 25.00
No. 1 railroad wrought	14.50 to 15.00
Forge fire	10.50 to 11.50
No. 1 yard wrought, long	14.00 to 14.50
Cast borings (steel mill)	10.25 to 11.25
Cast borings (chemical)	14.00 to 14.50
Machine shop turnings	10.75 to 11.50
Mixed borings and turnings	10.75 to 11.25
Iron and steel pipe (1 in. diam., not under 2 ft. long)	12.75 to 13.25
Stove plate (steel mill)	10.75 to 11.25
Stove plate (foundry)	12.00 to 12.25
Locomotive grate bars	11.50 to 12.00
Malleable cast (railroad)	16.50 to 17.50
Cast iron car wheels	14.00 to 14.50
No. 1 heavy breakable cast	14.00 to 15.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	... \$18.50 to \$19.00
No. 1 heavy cast (columns, building material, etc.), cupola size	17.00 to 17.50
No. 2 cast (radiators, cast bollars, etc.)	16.00 to 16.50

Cleveland

Holiday Suspensions of Pig Iron Shipments—Steel Specifications Decline

CLEVELAND, Dec. 22.—New business in finished steel and specifications have fallen off with the approach of inventory time, although some of the mills continue to enter a good volume of orders. Most producers have enough contract tonnage on their books to keep their plants busy through January, or longer. Some also are filled up with specifications for next month, but others report that specifications are coming out rather slowly. Consumers are still getting fair deliveries on steel, and are not disposed to put steel in stock, except for early requirements. The Cleveland Union Terminal Co. has sent out an inquiry for bids on a 52-story tower building, which will be part of the Union Station project, which will require 15,000 tons, or more, of steel. Other structural inquiry is light. There is considerable demand from Lake shipyards for plates for repair work on vessels. The Lima Locomotive Works, Inc., have taken an order for 25 large locomotives for the Baltimore & Ohio Railroad. Plate prices have grown stronger and 1.90c., Pittsburgh, now appears to be the usual quotation. Steel bars are firm at 2c., Pittsburgh. The structural material market is still represented by a range of from 1.90c. to 2c., Pittsburgh, although the latter is the more common price.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 3.95c.; No. 28 galvanized sheets, 5.10c.; No. 10 blue annealed sheets, 3.15c.; cold-rolled rounds and hexagons, 3.90c.; flats and squares, 4.40c.; hoops and bands, 3.85c.; No. 9 annealed wire, \$3 per 100 lb.; No. 9 galvanized wire, \$3.45 per 100 lb.; common wire nails, \$3 base per 100 lb.

Pig Iron.—Sales were light the past week and not much activity is looked for until after the holidays. One producer, however, sold 4000 tons of foundry and malleable iron for the first quarter, including two 1000-ton lots, and has inquiries for 5000 tons pending, including one for 2000 tons. Shipments have slowed down somewhat, owing to suspensions until after the holidays, this being particularly true of iron for the automotive industry. However, some of the leading stove and furnace manufacturers have increased their shipping orders and one producer that supplies considerable iron to those industries, reports that its December deliveries will exceed the amount shipped in November. Shipments by most producers are still in excess of production. The market is firm at recent quotations of \$20.50, Valley furnace, for foundry and

malleable iron, and at \$23, Lake furnace, for delivery in western Ohio, Indiana, and Michigan. No iron is being offered by Cleveland furnaces.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6.01 from Birmingham.

Basic, Valley furnace.....	\$20.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25.....	22.26
Southern fdy., sil. 1.75 to 2.25.....	\$27.01 to 28.01
Malleable.....	22.26
Ohio silvery, 8 per cent.....	32.52
Standard low phos., Valley furnace.....	28.00 to 28.50

Iron Ore.—The amount of Lake Superior ore on hand at furnaces and Lake Erie docks Dec. 1, was 41,685,888 tons, or nearly 1,000,000 tons more than on the same date a year ago, when the amount on hand was 40,728,035. The amount at furnaces Dec. 1, was 33,829,734 tons. Ore consumed by Lake furnaces in November was 4,554,377 tons, a decrease of 55,012 tons as compared with the longer month of October. The amount consumed in November last year was 3,688,726 tons. Furnaces in the central district consumed last month 2,412,800 tons, a decrease of 55,649 tons as compared with October. Lake front furnaces consumed 1,924,281 tons, a decrease of 15,474 tons. All-rail furnaces consumed 113,944 tons, a decrease of 2898 tons, and Eastern furnaces consumed 103,353 tons, a gain of 19,009 tons. There were 184 furnaces using Lake ore in blast Nov. 30, a gain of six for the month.

Semi-Finished Steel.—Sales made during the week showed a \$3 a ton range in prices. One consumer bought 6000 tons of sheet bars for the first quarter at \$35, Youngstown, or \$1 a ton lower than the price at which most consumers have contracted for that delivery. The \$1 a ton concession may have been due to the fact that the seller had a freight disadvantage as compared with a mill closer to the consuming point. While most consumers have contracts for the first quarter, a fair number of new inquiries have come out for that delivery and a Cleveland mill that is holding to \$38, Cleveland, Youngstown or Pittsburgh, reports several sales at that price, aggregating 12,000 tons of sheet bars, billets and slabs. Some consumers who need additional tonnage for the first quarter are resisting paying over \$36 for sheet bars and \$35 for slabs.

Sheets.—New orders are light. While most mills have a good volume of business on their books for the first quarter, specifications for January shipment are not coming out as fast as they would like. Shipments on low-priced fourth quarter contracts are being cleaned up and a severe test of present ruling quotations is expected when some of the consumers who have not yet covered come into the market. Although few mills will shade regular quotations, galvanized sheets can be bought at 4.50c., or a \$2 a ton concession, for January shipment, and there appears to be some irregularity in black sheets.

Strip Steel.—Mills have a fair volume of orders for hot-rolled strip, although some need additional specifications for January rolling. Cold-rolled strip is in good demand, and some mills are being crowded for early shipments. Regular prices are being maintained.

Reinforcing Bars.—New demand is very light. There is one new inquiry for 100 tons in connection with the Cleveland Union Station project. Rail steel bars are unchanged at 1.80c. to 1.90c., Pittsburgh.

Bolts, Nuts and Rivets.—The present price of \$2.60, Pittsburgh, on large rivets has been continued for the first quarter by the leading local manufacturer, for delivery at all points outside of Cleveland. For local delivery, the price is \$2.70, Cleveland, or \$2.80, delivered to consumers' plants. For small rivets, the same manufacturer is continuing its present discount of 70 and 10 per cent off list, f.o.b. Pittsburgh. There is some irregularity in the small rivet market. Bolt and nut specifications have fallen off because of the approaching inventory period.

Coke.—Demand for coke has again become quite lively after several weeks of inactivity, during which some of the by-product plants accumulated considerable

surplus coke. Prices are firmer on all grades. Producers have sold considerable coke at advances above \$7, the price that they were quoting a week ago, and are now asking \$7.50, ovens, for egg coke and \$8 for nut size. A number of producers have advanced foundry coke, which is now quoted at \$5.50 to \$6, ovens, for better Connellsville grades for prompt shipment.

Old Material.—The market is virtually at a standstill. A number of the mills have held up shipments until after their inventories, and there is no new demand. Dealers are well covered on old orders and are not buying scrap. With an absence of demand, the supply of material is in excess of the requirements, and the market is weak. However, there are no transactions on which to base quotations, and these are unchanged, but present quotations are regarded as nominal.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel.....	\$17.00 to \$17.50
Rails for rolling.....	16.75 to 17.00
Rails under 3 ft.....	19.50 to 20.00
Low phosphorus melting.....	19.00 to 19.25
Cast iron borings.....	14.00 to 14.50
Machine shop turnings.....	13.50 to 14.00
Mixed borings and short turnings.....	14.00 to 14.50
Compressed sheet steel.....	15.50 to 16.00
Railroad wrought.....	14.50 to 15.00
Railroad malleable.....	20.50 to 21.00
Light bundled sheet stampings.....	12.50 to 12.75
Steel axle turnings.....	15.25 to 15.50
No. 1 cast.....	18.00 to 18.50
No. 1 busheling.....	14.25 to 14.50
Drop forge flashings.....	14.75 to 15.00
Railroad grate bars.....	13.75 to 14.00
Stove plate.....	13.75 to 14.00
Pipes and flues.....	11.50 to 12.00

Seattle

Lower Pig Iron Keeping Out Foreign Iron—Steel Firm

SEATTLE, Dec. 18.—New buying at present is light, but prices remain firm. When the recent reduction of \$2 and \$4 per ton was made in ocean carrying rates, buyers held off placing orders, believing they would secure the saving in freights. Instead of lower prices, there has been a firming up at least in plates and shapes. Three of the largest Eastern mills now are holding plates firm at 2.30c. and shapes at 2.35c. Seattle delivery. However, it is claimed, without confirmation that one Eastern plate mill is still naming 2.20c. on plates.

The new rate of 30c. per 100-lb. on water shipments from Eastern ports is already being shaded, one non-conference line having named a 25-cent rate recently in at least one case.

Foundries here have operated at 50 per cent or less for some time, and have all the pig iron they will need for several months. The Utah maker of pig iron has lately reduced prices at least 50c. per ton, and is now quoting foundry grades at about \$20 to \$20.50 per ton, delivered Seattle. These prices have pretty effectually shut out foreign iron from the Seattle market.

The Everett, Wash., water line, which calls for about 600 tons of plates and includes 15,000 ft. of 28-in. steel pipe, is to be readvertised for bids after the first of the year. Bids are to be opened on Jan. 2 for the Vantage Ferry bridge across the Columbia river, 1800 tons, while an old inquiry for the bridge of the Gods, also to cross the Columbia river, has been revived. A new hotel in Seattle is in prospect, requiring 1200 tons of steel.

Prices on sheets do not seem to be so firm as on the heavier materials. Black sheets, No. 28 gage, are quoted at 3.75c. to 3.85c. for Seattle delivery, which figure back to about 3.10c. to 3.20c. at Eastern mill.

The bulk of the bar orders are being placed with the Pacific Coast Steel Co. On reinforcing bars, it is quoting 2.45c. for Seattle delivery. Merchant steel bars are held at 2.35c. for Seattle delivery.

Philadelphia

Specifications on Contracts Fairly Heavy But New Buying of Steel Is Light

PHILADELPHIA, Dec. 22.—New buying of finished steel is very light, but consumers and jobbers are specifying fully on their fourth quarter contracts and it is plain that there will be a large carry-over of tonnage into the new year at prices lower than are now being quoted for that period. On plates, for example, Eastern mills have made contracts on which deliveries will extend into first quarter at prices ranging from 1.60c. to 1.80c., Pittsburgh. Some first quarter contracts for plates have been entered into at 1.70c. and 1.75c. and also quite a number at 1.80c. A good deal of steel bar tonnage entered at 1.80c. and 1.90c., Pittsburgh, will carry consumers well into the first quarter, but on new contracts 2c., Pittsburgh, is firm. Most of the low-priced shape tonnage, it is said, will be shipped by the end of the year and that which is carried over into the first quarter will be largely at 1.90c. and 2c., Pittsburgh, the latter price applying on small lots. There has been a fair volume of railroad buying, including 2000 cars and 50 locomotives for the Baltimore & Ohio.

Pig Iron.—Eastern Pennsylvania furnaces will enter the new year with substantial order books. One nearby furnace has sold practically its entire output for the first four months of the year, while others have sold about all they will make in three months. However, there is no shortage of iron in sight, as nearly all melters have covered, and those who have not fully filled their requirements will no doubt be able to do so from stocks of foreign iron if domestic iron is not available. A cast iron pipe company, which has been a large importer of iron, is offering for sale a large tonnage, probably not less than 25,000 tons, some of which has arrived, at prices approximating \$21.25, f.o.b. cars, duty paid. The iron is being offered through a local pig iron firm. At the port of Philadelphia alone 27,000 tons of foreign iron came in last month, and the December tonnage will probably be close to this figure. Eastern foundry iron is being held firmly at \$23, base, furnace.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$23.76 to \$24.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	24.26 to 24.63
East. Pa. No. 1X.	24.76 to 25.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic, delivered eastern Pa.	23.00 to 23.50
Gray forge	23.00 to 23.50
Malleable	24.00 to 25.00
Standard low phos. (f.o.b. furnace)	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	24.50

Ferroalloys.—There is no unusual demand for ferro-manganese, sales being mostly in car lots. Price is unchanged at \$115, seaboard or furnace, for foreign or domestic alloy.

Billets.—There have been fairly good sales of billets, especially those of special analysis, for first quarter. Eastern mills are trying to obtain a base price of \$36, Pittsburgh, but some contracts have been made at lower figures. On forging billets the usual first quarter quotation is \$41, Pittsburgh.

Plates.—Orders for plates are in increasing volume at some of the Eastern mills. One company reports that it has been unable to accept all of the business offered because it could not meet the short delivery terms requested. As the first quarter approaches, the price situation grows more satisfactory from the mill viewpoint. Although the mills will be shipping in January a good deal of tonnage at 1.60c. to 1.70c., Pittsburgh, contracts are now being made at 1.80c. Some were entered a few weeks ago at 1.70c. and 1.75c., Pittsburgh. The mills believe that the price situation is growing stronger and that 1.80c. will soon apply on all business.

Structural Shapes.—Eastern shape mills have a sub-

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For the 11 months ended with November of the current year computed bookings aggregated 2,401,200 tons as against 2,134,400 tons in the corresponding period of 1924 and 1,960,800 tons in the corresponding period of 1923. The 12 months of 1924 showed buying of 2,363,500 tons.

Following are statistics for 1924 and 1925:

1924	Bookings		Computed Tonnage
	Actual Tonnage	Per Cent of Capacity	
January	176,732	70	203,000
February	180,735	71	205,900
March	174,372	69	200,100
April	162,685	64	185,600
May	147,087	58	168,200
June	162,245	64	185,600
July	174,066	68	197,200
August	150,769	59	171,100
September	167,027	65	188,500
October	166,367	65	188,500
November	213,247	83	240,700
Total (11 mos.)			2,134,400
1925			
January	147,079	57	165,300
February	149,489	58	168,200
March	177,154	69	200,100
April	197,813	78	255,200
May	176,886	69	200,100
June	219,830	87	252,300
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August	199,856	79	229,100
September	202,664	80	232,000
October	222,386	88	255,200
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Awards Show a Decline, While New Work Up for Bids Is Also in Smaller Volume

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Waterway Paper Products Co., Chicago, 300 tons to McClintic-Marshall Co.

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First National Bank Building, Keokuk, Iowa, 250 tons, to Iowa Steel & Iron Works, Cedar Rapids, Iowa.

International Harvester Co., Fort Wayne, Ind., forge shop, 350 tons, to Rochester Bridge Co., Rochester, Ind.

Philadelphia

Specifications on Contracts Fairly Heavy But New Buying of Steel Is Light

PHILADELPHIA, Dec. 22.—New buying of finished steel is very light, but consumers and jobbers are specifying fully on their fourth quarter contracts and it is plain that there will be a large carry-over of tonnage into the new year at prices lower than are now being quoted for that period. On plates, for example, Eastern mills have made contracts on which deliveries will extend into first quarter at prices ranging from 1.60c. to 1.80c., Pittsburgh. Some first quarter contracts for plates have been entered into at 1.70c. and 1.75c. and also quite a number at 1.80c. A good deal of steel bar tonnage entered at 1.80c. and 1.90c., Pittsburgh, will carry consumers well into the first quarter, but on new contracts 2c., Pittsburgh, is firm. Most of the low-priced shape tonnage, it is said, will be shipped by the end of the year and that which is carried over into the first quarter will be largely at 1.90c. and 2c., Pittsburgh, the latter price applying on small lots. There has been a fair volume of railroad buying, including 2000 cars and 50 locomotives for the Baltimore & Ohio.

Pig Iron.—Eastern Pennsylvania furnaces will enter the new year with substantial order books. One nearby furnace has sold practically its entire output for the first four months of the year, while others have sold about all they will make in three months. However, there is no shortage of iron in sight, as nearly all melters have covered, and those who have not fully filled their requirements will no doubt be able to do so from stocks of foreign iron if domestic iron is not available. A cast iron pipe company, which has been a large importer of iron, is offering for sale a large tonnage, probably not less than 25,000 tons, some of which has arrived, at prices approximating \$21.25, f.o.b. cars, duty paid. The iron is being offered through a local pig iron firm. At the port of Philadelphia alone 27,000 tons of foreign iron came in last month, and the December tonnage will probably be close to this figure. Eastern foundry iron is being held firmly at \$23, base, furnace.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$23.76 to \$24.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	24.26 to 24.63
East. Pa. No. 1X.....	24.76 to 25.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic, delivered eastern Pa.....	23.00 to 23.50
Gray forge.....	23.00 to 23.50
Malleable.....	24.00 to 25.00
Standard low phos. (f.o.b. furnace)	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	24.50

Ferroalloys.—There is no unusual demand for ferromanganese, sales being mostly in car lots. Price is unchanged at \$115, seaboard or furnace, for foreign or domestic alloy.

Billets.—There have been fairly good sales of billets, especially those of special analysis, for first quarter. Eastern mills are trying to obtain a base price of \$36, Pittsburgh, but some contracts have been made at lower figures. On forging billets the usual first quarter quotation is \$41, Pittsburgh.

Plates.—Orders for plates are in increasing volume at some of the Eastern mills. One company reports that it has been unable to accept all of the business offered because it could not meet the short delivery terms requested. As the first quarter approaches, the price situation grows more satisfactory from the mill viewpoint. Although the mills will be shipping in January a good deal of tonnage at 1.60c. to 1.70c., Pittsburgh, contracts are now being made at 1.80c. Some were entered a few weeks ago at 1.70c. and 1.75c., Pittsburgh. The mills believe that the price situation is growing stronger and that 1.80c. will soon apply on all business.

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Bridge of the Gods, Columbia River, Ore., 2000 tons, to Wallace Equipment Co., Seattle, Wash.

California Packing Corporation, Kahului, territory of Hawaii, 750 tons, to Virginia Bridge & Iron Co.

Grandstand at Sportsmans Park, St. Louis, additions, 650 tons to Stupp Brothers Bridge & Iron Co.

University of Wisconsin, Madison, private dormitory building for Badger Building Service, Milwaukee, 150 tons, to Milwaukee Structural Steel Co.

Pennsylvania Railroad, shop at Olean, N. Y., 500 tons, to American Bridge Co.

Barge for Santa Fe Railroad, 700 tons, to Moore Dry Dock Co., Oakland.

Golden State Theater, San Francisco, 116 tons, to unnamed local fabricator.

Hotel, San Francisco, 100 tons, to Golden Gate Iron Works.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Office building, Trinity Place, New York, 2100 tons.

New York subways, section 2, route 102, Eighth Avenue and Eighteenth Street, 2800 tons; bids opened Dec. 31.

Baltimore & Ohio Railroad, bridges, 1100 tons.

St. Marks' Hospital, Second Avenue and Eleventh Street, New York, 400 tons.

Bonnell Motor Co., Newark, N. J., 225 tons.

City of Baltimore, highway viaduct, 1000 tons.

Elementary school, Charlestown, Boston, 200 tons.

Unitarian building, Boston, 100 tons.

Midland & Atlantic Bridge Corporation, Ashland, Ky., bridge over Big Sandy River, 800 tons; bids in.

U. S. Engineer Office, Louisville, horses and props for dam 52, Ohio River, 420 tons; bids in.

S. S. Kresge Co., Columbus, Ohio, building, 500 tons; previously reported as 200 tons; bids in.

Ohio State Savings Association, Columbus, Ohio, building; tonnage as yet unknown.

Chicago & North Western Railroad, rebuilding ore Dock No. 1 at Ashland, Wis., at a cost of \$240,000; Peppard & Fulton Co., Metropolitan Bank Building, Minneapolis, Minn., general contractor.

Frick School, Oakland, 200 tons.

Warehouse, San Francisco, 500 tons.

Pacific Rolling Mill Co., Inc., fabricating shop, 217 tons.

Puget Sound Navy Yard, store house, 100 tons.

Theater, San Francisco, 217 tons.

Miner Street subway, Stockton, 130 tons.

Transit shed, Los Angeles, 450 tons.

City hall, Pasadena, 300 tons.

Shell Oil Co., San Francisco, 500 tons.

U. S. Engineers, San Francisco, 110 tons.

Fidelity Life Insurance Building, Parkway and Fairmount Avenue, Philadelphia, 2000 tons.

Pennsylvania Railroad, bridge over Schuylkill River at Philadelphia, 600 tons, and bridge at Bryn Mawr, Pa., 180 tons.

Bascule bridge over Tuckahoe River, New Jersey, 100 tons.

Union Station, Cleveland, 15,000 tons.

Industrial alcohol plant, Richmond, Va., 225 tons.

Tenth Street tunnel, Pittsburgh, 500 tons; Booth & Flinn, Inc., general contractors.

Consolidated Gas, Electric Light & Power Co., power plant in Baltimore, 500 tons.

Liggett & Myers Co., tobacco factory, Richmond, Va., 400 tons.

Union Station, Cleveland, 100 tons.

Section of subway, New York, 100 tons; George Mason & Co., general contractor.

Elks Building, Brooklyn, N. Y., 200 tons; revised figures asked.

GRAYBAR ELECTRIC CO.

Merchandising Department of Western Electric Co. Assumes Corporate Identity

The Western Electric Co. has announced the organization of the Graybar Electric Co. to take over all of the merchandising activities of the parent company. The new company, with headquarters in New York, will take over all jobbing branches and sell all materials manufactured by the Western Electric Co., except those manufactured for the American Telephone & Telegraph Co.

Officers of the new company are all veteran Western Electric men. The president is Albert Lincoln Salt, who began service with the company in 1881. He recently has been vice-president in charge of purchases and traffic. Frank A. Ketcham, executive vice-president, has recently been general manager of the supply department. George E. Cullinan, vice-president in charge of sales, has been general sales manager of the Western Electric supply department. Leo M. Dunn, vice-president in charge of merchandising and accounting, has been with the Western Electric Co. since 1886, and recently was general merchandise manager of the supply department. Elmer J. Sheppard is treasurer of the new company and N. R. Frame is secretary. Herbert Metz, advertising manager for the supply department, holds the same position with the Graybar Electric Co.

The somewhat unusual name is a revival of the original name of the company, which began in 1869 when Enos M. Barton, then a telegraph operator, bought an electrical shop in Cleveland. Mr. Barton formed a partnership with Prof. Elisha Gray of Oberlin College, who was a close competitor with Alexander Graham Bell as inventor of the telephone. The new company obtained a contract to manufacture telephone and telegraph supplies for the Bell instruments and for the Western Union Telegraph Co. After the company moved to Chicago its growth to its present position of 60,000 employees has been steady.

Projects Pending

Leila Y Post Hospital, Battle Creek, Mich., 175 tons.

Hotel, Geneva, Ill., 200 tons. Architects, Mundie & Jensen, Chicago.

Harbor apartment building, 432 Belmont Avenue, Chicago, 100 tons. Architects, McNally & Quinn.

O'Rourke Apartments, Delaware and DeWitt Avenues, Chicago, 175 tons. Gusske & Foster, architects.

Phillips State Bank, Clark and Lunt Streets, Chicago, 200 tons. Architect, Joseph Scheitler.

St. Leo's High School, Seventy-ninth and Peoria Streets, Chicago, 180 tons. Architect, Joseph W. McCarthy.

Hotel, 644 Cass Street, Chicago, 280 tons. Architects, Oldefest & Williams.

Angelus Apartments, 622 Gary Place, Chicago, 100 tons. Architects, Oldefest & Williams.

Bridge, city of Rockford, Ill., 300 tons. Powers Thompson, contractor, Joliet, Ill., low bidder.

Paris Garter Co., building, 1140 West Congress Street, Chicago, 300 tons. General contract awarded to Bulley & Andrews.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

Dec.	Lake	Electro- lytic*	Straits (Spot)		Lead		Zinc	
			New	York	New	St. Louis	New	St. Louis
16	14.25	13.75	61.87 1/2	9.25	9.00	8.90	8.55	
17	14.25	13.87 1/2	62.25	9.25	9.00	8.92 1/2	8.57 1/2	
18	14.25	13.87 1/2	62.25	9.25	9.00	8.95	8.60	
19	14.25	13.87 1/2	...	9.25	9.00	8.95	8.60	
21	14.25	13.87 1/2	63.00	9.25	9.00	8.95	8.60	
22	14.25	13.87 1/2	62.50	9.25	9.00	8.95	8.60	

*Refinery quotation; delivered price 1/4c. higher.

New York

NEW YORK, Dec. 22.

As the year end approaches the markets are becoming more quiet. Copper is a little stronger but buying is light. The tin market is only moderately active with prices a little higher. No changes are noted in the lead market. Conditions in zinc are practically unchanged, both as to demand and prices.

Copper.—Largely due to a better tone and slightly higher prices in London, the copper market here has turned a little stronger, as reflected in slightly higher asking prices. There is very little buying reported even by domestic consumers after the fairly heavy purchases made about two weeks ago and alluded to last week. Most producers are now asking 14.25c., delivered, as against a maximum of 14.12 1/2c. a week ago. One or two report that they have made sales as high as 14.25c. in the last day or two and the quantities were small. It is evident that business is still being done as low as 14.12 1/2c., with some at 14.20c., delivered. The market is quotable at a range of 14.12 1/2c. to 14.25c., delivered in the Connecticut valley. No improvement is reported in foreign demand. It is expected that the market will remain in the present condition until after the holidays, although it is recalled that three or four years ago some of the heaviest buying of the year took place on the Saturday after Christmas. Lake copper is quoted at 14.25c., delivered.

Tin.—It develops that sales of Straits tin on Dec. 14, 15 and 16 were fairly large and constituted the heaviest business in the last 10 days. Approximately 1000 tons was sold, fairly evenly divided among the three days. Over half of the total was taken by consumers, mostly for early delivery, but some of it for shipment through April. The London market responded but poorly to this buying for several days. It advanced slightly on Dec. 16, but this created a bad impression in this market. On Dec. 17, however, the London market was taken in hand with an advance of £4 to £5 per ton. The result on this side was almost complete stagnation on that day, and buyers here have let the market alone ever since. Yesterday the market here was almost stagnant and today it was not much better, with sales of about 100 tons. In London the market yesterday was still rising, but today it had sagged about 10s. per ton, with spot standard quoted at £285 10s., future standard at £278 10s. and spot Straits at £287 10s. These prices are about £7 per ton higher than a week ago. The Singapore price was £285 5s. Spot Straits tin was quoted here today at 62.50c., New York. The opinion prevails that had London advanced its prices earlier an entirely different volume of business would have been accomplished; as it was America was not baited. Arrivals thus far this month have been 4430 tons, with 6070 tons reported afloat.

Lead.—The market is exceedingly quiet and devoid of features. The leading interest is evidently taking a fair amount of business at its contract price of 9.25c., New York. The outside market is quoted at 9c., St. Louis, or 9.30c. to 9.35c., New York.

Zinc.—The scarcity of December prime Western zinc continues with prices at a premium over those for January. Consumers are fairly well covered for early needs and producers are well sold up, with the result that the

market is quiet and firm. Prompt and December metal is quoted at 8.70c. to 8.75c., St. Louis, with demand confined to small lots. The January position, which we quote as the market, is a little stronger, and becoming more so each week, at 8.60c., St. Louis, or 8.95c., New York. Future positions beyond January are about five points less per month.

Nickel.—Wholesale lots of ingot nickel are quoted unchanged at 34c. with shot nickel at 35c. and electrolytic nickel at 38c. per lb.

Antimony.—The scarcity of Chinese metal is still the feature and spot and December delivery are still quoted at 22c., New York, duty paid, with January and February arrival at 21.75c. to 22c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 28c. per lb., delivered.

Old Metals.—The market is firm. Dealers' selling prices, in cents per lb., are as follows:

Copper, heavy and crucible	13.75
Copper, heavy and wire	13.00
Copper, light and bottoms	11.75
Heavy machine composition	10.00
Brass, heavy	9.00
Brass, light	8.00
No. 1 red brass or composition turnings	9.25
No. 1 yellow rod brass turnings	9.50
Lead, heavy	8.25
Lead, tea	7.00
Zinc	5.75
Cast aluminum	22.00
Sheet aluminum	22.00

Chicago

DEC. 22.—This market is fairly active, although spotty. Copper and antimony are unchanged and tin, lead and zinc are slightly weaker. The old metal market is quiet and prices are unchanged. We quote, in carload lots: Lake copper, 14.25c.; tin, 63.25c.; lead, 9.10c.; zinc, 8.75c.; in less than carload lots, antimony, 24c. On old metals we quote copper wire, crucible shapes and copper clips, 11c.; copper bottoms, 9.25c.; red brass, 9c.; yellow brass, 8c.; lead pipe, 8c.; zinc, 5.25c.; pewter, No. 1, 37c.; tin foil, 44c.; block tin, 52c.; all being dealers' buying prices for less than carload lots.

Non-Ferrous Rolled Products

A moderate reduction in brass and copper rolled products was put in effect on Dec. 16. The reduction was 1/4c. per lb. on all except copper in rolls, which was reduced 3/4c. Full lead sheets have declined 1/4c. per lb. Zinc sheets are unchanged. For New York warehouse prices see page 1794.

List Prices Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight Up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

<i>Sheets</i>	
High brass	19 1/4c.
Copper, hot rolled	22 1/4c.
Zinc	12c.
Lead (full sheets)	13c.
<i>Seamless Tubes</i>	
High brass	23 3/4c.
Copper	24 1/2c.
<i>Rods</i>	
High brass	16 7/8c.
Naval brass	19 1/2c.
<i>Wire</i>	
Copper	16 1/4c.
High brass	19 1/2c.
<i>Copper in Rolls</i>	
Copper	21 1/2c.
Brazed Brass Tubing	27 1/2c.

Production of bituminous coal continues high. The output for the week ended Dec. 12 is reported by the National Coal Association at 12,900,000 net tons, compared with 12,768,000 tons in the preceding week and 11,600,000 tons in the week which included Thanksgiving Day. The current figure has been exceeded only four times in the entire history of the bituminous coal industry—once in 1918, once in 1919 and twice in 1920.

The Standard Steel & Iron Co., formerly the Aetna Nut Co., Southington, Conn., started rolling steel on Dec. 19.

PERSONAL

John T. Harrington, president-elect of the Trumbull Steel Co., Warren, Ohio, succeeding Philip Wick, of Youngstown, has been identified for many years with the iron and steel industry of the Mahoning Valley in an advisory capacity. Mr. Harrington is senior member of the law firm of Harrington, DeFord, Huxley & Smith, of Youngstown; a vice-president of the Republic Railway & Light Co., New York; president Pennsylvania-Ohio Electric Co., and Pennsylvania-Ohio Power & Light Co., and vice-president Penn-Ohio Edison Co., subsidiaries of the Republic company; a director of the General Fireproofing Co., Youngstown, Ohio Leather Co., Girard, and Republic Rubber Co., Youngstown, a subsidiary of the Lee Tire & Rubber Co. Mr. Harrington is also general counsel for these companies, which are located in the Mahoning Valley. From the time of its formation in 1912, he has been a director and general counsel of the Trumbull company. Mr. Harrington agreed to assume the presidency at the request of Cleveland bankers who floated debenture notes of \$5,000,000 and a first mortgage bond issue of \$13,000,000. He states the company is in efficient physical condition, that it will continue as an independent interest and that stockholders will be kept fully informed at all times as to its earnings. He states that the company's strip mills, in particular, are among the best from a mechanical standpoint in the country. He will apply himself to reducing costs further and to strengthening the company's position in the trade. Mr. Harrington has assumed his new duties and will devote all of his time to the Trumbull company, retaining residence in Youngstown. Mr. Wick served as temporary president for three months, during the company's financial reorganization. He was previously a director and vice-president, and is one of the largest holders of common stock. Jonathan Warner, who founded the company and served as its president from 1912 until August, 1925, has been living in New York, and will make a trip to Europe this winter.



J. T. HARRINGTON

his headquarters in New York. Mr. Beattie was formerly connected with the Autocar Co., Ardmore, Pa.

I. Moehler, formerly superintendent of the Eastern Car Co., has been appointed general superintendent and chief engineer of the car company and the Nova Scotia Steel & Coal Co., following the resignation of John Frazer, hitherto superintendent of the steel company's plant. Howard Cantley has been appointed superintendent of the steel works. The appointments are in pursuance of a policy adopted after the consolidation of units of the British Empire Steel Corporation, Sydney, N. S.

George D. Kirkham, sales agent American Steel & Wire Co., Chicago, is to retire Dec. 31. Mr. Kirkham first came to the company in 1886 as sales agent of the old Washburn & Moen Mfg. Co., Worcester, Mass. This company was taken over by the American Steel & Wire Co. 27 years ago. Expert in the intricacies of the fine wire products of the old company, Mr. Kirkham continued in those lines until 1902, when he was established as sales agent at Memphis, Tenn., handling both merchant trade and manufacturing lines.

T. G. Straub, who has been superintendent of the Evansville Tool Works, Evansville, Ind., for the past six years, has resigned.

Frederick V. Lindsey has been appointed sales manager of resistance materials by the Driver-Harris Co., Harrison, N. J. He has been identified with the



F. V. LINDSEY

manufacture of nickel and nickel alloys for many years, having been vice-president and secretary of the Electrical Alloy Co. previous to its purchase by Driver-Harris Co. It was under his supervision that the facilities of the Electrical Alloy Co. were increased from a small wire-drawing mill with limited production to one of the leading producers of nickel-chromium alloys for the electrical industry. His efforts will be concentrated in his new appointment on the manufacture and sale of "Nichrome" for industrial and domestic applications.

Don Ferguson, Winnipeg, Man., Canada, after spending some 25 years with Wood-Vallance, Ltd., Winnipeg, as purchasing agent of the automotive and sporting goods department, has become purchasing agent for the automotive and sporting goods department of the Miller-Morse Hardware Co., Winnipeg.

Alfred Bourgeois has joined the Triumph Electric Company, Cincinnati. He has had many years experience in the electrical industry, having served as assistant to the vice-president of the Sprague Electric Co., for several years. Later he entered the sales organization of the Eck Dynamo & Motor Co., where he successively held the positions of sales manager, secretary and president.

James W. Sneyd, for 14 years connected with the National Acme Co., Cleveland, has resigned as manager of the die department to accept a position with the Geometric Tool Co., New Haven, Conn.

Harold C. Strohm, for many years in charge of bolt, nut and rivet sales for the Bethlehem Steel Corporation in the New York territory, has resigned to become vice-president of Court, Ernst & Wesson, Inc., 131 Pacific Avenue, Jersey City, N. J., jobber in iron and steel. Mr. Strohm was formerly with the Ameri-

J. N. Walker has been appointed general sales manager Oxfeld Acetylene Co., 30 East Forty-second Street, New York. L. D. Burnett has been appointed Eastern Department sales manager, to succeed Mr. Walker, and Z. T. Davis, Jr., is now filling Mr. Burnett's former assignment as assistant sales manager, Eastern department. Mr. Walker is well known in the oxy-acetylene industry, having served for many years in progressive advancement through the Oxfeld sales organization.

Henry D. Carlton, vice-president of Manning, Maxwell & Moore, Inc., formerly in charge of the steam specialties department, has now assumed charge also of machine and crane sales. Thomas S. Stephens has been appointed manager of railroad sales of the machinery department. William D. Clarke has been appointed general sales manager of the crane department.

J. B. Beattie has been appointed Eastern sales manager of the Lapeer Trailer Corporation, Lapeer, Mich., manufacturers of automatic semi-trailers. He will make

can Iron & Steel Mfg. Co., Lebanon, Pa., which was acquired by the Bethlehem company Jan. 1, 1917. Except for a year or so of service during the war as captain in the Ordnance Department, U. S. A., Mr. Strohm has been since with the Bethlehem Steel Corporation.

James W. Owens, welding aide, United States Navy Yard, Norfolk, Va., will become affiliated Jan. 1 with the Newport News Shipbuilding & Dry Dock Co., as director of welding. The Newport company has decided to extend its use of welding and Mr. Owens will have charge of this work. He became associated with the welding committee of the Emergency Fleet Corporation in April, 1918, and in September of the same year took up his duties at the Norfolk Navy Yard. He is credited with having organized the first welding shop in the Navy, and has trained a large number of welders. He has contributed papers to technical societies and to the technical press. He was one of the organizers and a past vice-president of the American Welding Society



J. W. OWENS

and is a member of the American Institute of Electrical Engineers and of the Hampton Roads Engineering Club.

Newlin T. Booth, president Deemer Steel Casting Co., New Castle, Del., has been elected president of the Delaware Safety Council, succeeding C. H. Quackenbush, resigned. For the past year Mr. Booth has been serving as industrial vice-president and under his leadership industrial safety activities in Delaware have been given a great impetus. Before coming to Delaware Mr. Booth was superintendent of one of the Bethlehem Steel Co. plants.

Charles B. King, Marion Steam Shovel Co., Marion, Ohio, has been elected president of the Ohio Manufacturers' Association. George F. Dana, president Peerless Foundry Co., Cincinnati, was chosen vice-president.

G. T. Aitken, formerly sales manager of the Vonnegut Machinery Co., Indianapolis, has become associated with the Indianapolis plant of Fairbanks, Morse & Co.

Thomas J. Little, Jr., of the Lincoln Division of the Ford Motor Co., Detroit, is the nominee for president of the Society of Automotive Engineers for 1926.

H. A. Baxter has been appointed manager of the steel sales department of Henry Disston & Sons, Inc., Philadelphia, manufacturer of saws, tools and steel. He succeeds Charles T. Evans, who has retired on account of poor health after many years as manager of the department. Mr. Baxter has been general manager of sales for the Tacony Steel Co., and the Penn Seaboard Steel Corporation, Philadelphia, for the last three years. Prior to that he was associated with the H. H. Franklin Automobile Co., the Midvale Steel Co., and the Tacony Ordnance Corporation. A graduate of the University of Michigan, he is a member of a number of engineering and scientific societies, including the Iron and Steel Institute of London.

E. A. Hurme, who has been manager steel mill section, industrial sales section, Westinghouse Electric & Mfg. Co., has been appointed manager of the newly created electric furnace section, industrial heating section. The rapid increase in the use of electricity for heating purposes has made it necessary to divide the industrial heating section into three sections.

Joseph G. Butler, Jr., dean of Mahoning Valley steel makers, celebrated on Dec. 21 his eighty-fifth birthday. He has completed the preparation of memoirs dealing with the growth of the iron and steel industry of the Mahoning Valley.

David L. Ward has been elected vice-president of the By-Products Coke Corporation, 332 South Michigan Boulevard, Chicago. He was formerly general manager, which duties he will retain with his vice-presidency. He was general manager of the Federal Furnace Co., Chicago, which was dissolved after its absorption by the By-Products Corporation.

Charles Piez, president Link-Belt Co., Chicago, has been reelected president of the Illinois Manufacturers' Association.

John S. Gullborg, president Alemite Die Casting & Mfg. Co., 2640 Belmont Avenue, Chicago, addressed the Chicago Foundrymen's Club Dec. 12, on the subject of die casting.

O. T. Muehlemeyer, Rockford, Ill., has been appointed district manager for Illinois, Iowa and Wisconsin for the Rodman Chemical Co., Verona, Pa., manufacturer of carburizers, compounds, quenching and tempering oils. Mr. Muehlemeyer was formerly metallurgist Barber-Colman Co., Rockford.

Richard G. Whipple, until recently associated with the Boston office of Rogers Brown & Crocker Brothers, Inc., is now with E. Arthur Tutein, Inc., Boston.

Charles Peck, vice-president in charge of production Doeher Die-Casting Co., Brooklyn, N. Y., was a guest of the New Britain, Conn., section American Society of Mechanical Engineers Thursday evening, Dec. 17. He gave an address on the manufacture and use of die castings.

Robert E. Fulton, vice-president Mack Trucks, Inc., and William Brewster, president Brewster & Co., have been made directors of Rolls-Royce of America, Inc., Springfield, Mass.

J. H. Redhead, formerly manager of sales and assistant to the president of the National Malleable & Steel Castings Co., Cleveland, has been elected vice-president and general manager of the Columbus Malleable Iron Co., Columbus, Ohio. He has been affiliated recently with a Cleveland bank.

Harry Coulby has been elected president of the Interlake Steamship Co., Cleveland, succeeding H. G. Dalton, who has been at the head of the company since its organization. Both Mr. Dalton and Mr. Coulby are members of Pickands, Mather & Co., and that company's lake fleet is operated by the Interlake Steamship Co. Mr. Coulby for 20 years was president of the Pittsburgh Steamship Co., which operates the United States Steel Corporation's lake fleet, but resigned about a year ago and became chairman of the board with the understanding that he was to retain the latter position until the end of this year. He will assume his position at the head of the Interlake company Jan. 1.

Dr. Keiji Ito, consulting engineer Toho Electric Power Co., and professor of the Tokyo Institute of Technology, was a recent visitor at the East Pittsburgh plant, Westinghouse Electric & Mfg. Co. Dr. Ito has been making a study of the application of motors to industrial equipment and household appliances and also a study of industrial heating. He is a graduate of Tokyo Institute of Technology and a post graduate of Harvard University.

Stewart V. Coles, formerly of the Deline Engineering Co., Inc., is now employed as salesman by Greenlie, Halliday Co., 499 Water Street, New York, bolt manufacturers, blacksmiths, machinists, boiler makers and structural steel workers.

OBITUARY

LESTER E. HICKOK, died at the age of 72 on Dec. 6, at Camp Hill, Pa. The cause was pneumonia, following injuries sustained in a fall. Mr. Hickok made the



LESTER E. HICKOK

first business trip ever made on a bicycle, when he was salesman for the Polk Mfg. Co., Hartford, Conn., bicycle manufacturer. In the employ of this concern he made a trip across the States, traveling from coast to coast, on a high-wheel bicycle. He was born at Bethany, Conn. He married the daughter of the late Darius Wilcox, who established the D. Wilcox Mfg. Co., Mechanicsburg, Pa., more than 35 years ago. Mr. Hickok began his business career in the lumber business. He was later associated with the Wilcox & Howe Co., Derby, Conn., and later entered the employ of the

Polk Mfg. Co. In 1898 he became associated with the D. Wilcox Mfg. Co., maker of special drop forgings, Mechanicsburg, Pa., in the capacity of sales manager and later general manager. At the time of his death he was a member of the board of directors.

SPENCER FREDERICK HALL, Racine, Wis., pioneer machine shop owner and former manufacturer of bicycles, died suddenly on Dec. 15. He was born in South Wales in 1857 and became a resident of Racine in 1881. He was widely known as an expert machinist and mechanical inventor and designer.

FRANCIS VON ALBADE CABEEN, for many years identified with the pig iron trade in Philadelphia, died Monday, Dec. 14, at the age of 75. Mr. Cabeen was found dead in the bath room of an apartment which he occupied with his son. He was a son of Robert B. Cabeen, associated with the grandfather of Robert C. Lea of Philadelphia in the pig iron business, trading as Cabeen & Co. Francis Cabeen succeeded to his father's interest upon the latter's death in 1876. In 1882 the firm name was changed to J. Tatnall Lea & Co. Mr. Cabeen withdrew from this partnership in 1899 and again started in business for himself under the name of Cabeen & Co., conducting a general trading and brokerage business in iron, steel and allied products. For the past 15 years he has been retired from business and has interested himself in historical research. He was the author of several papers dealing with the history of Colonial times in Eastern Pennsylvania.

BAXTER NEWELL, for the past 26 years associated with the Boston office of Niles-Bement-Pond Co., died of pneumonia at his home in Wollaston, Mass., Monday, Dec. 14, at the age of 56.

JOHN M. WITTERS, manager Milwaukee branch E. J. Woodison Co., Detroit, foundry and mill supplies, died suddenly on Dec. 14 at the age of 55 years. He is survived by a son, Charles F. Witters, who was assistant manager at Milwaukee.

RAILROAD EQUIPMENT

Cars Ordered Total 5525 and Those Inquired for, 8191—75 Locomotives Bought

Another active week in the railroad equipment industry gives promise that railroad buying of cars and locomotives will be one of the outstanding features of first quarter business. The Baltimore & Ohio Railroad ordered 2000 cars and 50 locomotives, the Pittsburgh & West Virginia bought 1000 cars and the Atlantic Coast Line 925. A number of other roads placed orders ranging from 100 to 400 cars. The Pacific Fruit Express is in the market for 5041 refrigerator cars, while the Southern Pacific is inquiring for 2000 cars of miscellaneous types and the Burlington wants 1000 box cars.

Freight cars in need of repair as of Dec. 1 showed a further decline, totaling 165,818, or 7.2 per cent of the number on line, a decrease of 886 as compared with the report of Nov. 15. Locomotives in need of repair on Dec. 1 numbered 10,725, or 16.9 per cent of the number on line. This was an increase of 16 as compared with the report of Nov. 15.

The principal equipment items of the week follow:

The Louisville & Nashville has ordered 1000 50-ton steel gondolas from the Pressed Steel Car Co.

The Baltimore & Ohio has ordered 2000 freight cars, of which 1000 steel box cars are to be built by the Bethlehem Steel Corporation and 1000 steel box cars by the Standard Steel Car Co. This railroad has also placed 25 locomotives with the Baldwin Locomotive Works and 25 with the Lima Locomotive Works.

The Pittsburgh & West Virginia has ordered 400 all-steel and 300 composite gondolas from the Pressed Steel Car Co. and 300 steel gondolas from the Canton Car Co.

The Atlantic Coast Line has given an order to the Pressed Steel Car Co. for 525 box cars and 300 hopper cars. This road has also ordered 100 ballast cars from the Virginia Bridge & Iron Co.

The Conley Tank Car Co. has ordered 200 tank cars from the American Car & Foundry Co.

The Chicago & North Western is inquiring for 150 ore cars.

The Union Pacific is reported to have leased 100 tank cars which were to have been bought, and is in the market for 15 passenger coaches, 10 baggage cars and 5 horse cars, and two baggage mail cars.

The Great Northern is reported to be planning on the purchase of 100 steel underframes and 1000 50-ft. automobile cars.

The Baltimore & Ohio is inquiring for 72 passenger coaches.

The Chicago, Rock Island & Pacific is expected to inquire shortly for 2750 cars of miscellaneous types.

The Missouri Pacific has ordered 10 Mikado type and 5 Pacific type locomotives from the American Locomotive Co.

The Chicago, Burlington & Quincy is inquiring for 1000 box cars.

The Pacific Fruit Express is in the market for 5041 refrigerator cars.

The Southern Pacific is inquiring for 2000 freight cars.

The Denver & Rio Grande Western has ordered 10 locomotives from the Baldwin Locomotive Works.

The Union Refrigerator Transit Co. placed 400 refrigerator cars with the American Car & Foundry Co.

The General Fireproofing Co., Youngstown, Ohio, has declared an extra dividend of 70 cents per share on common stock, in addition to the regular quarterly payment of 30 cents, for the fourth quarter, payable Jan. 2 to stock of record Dec. 20. This distribution will bring common stock cash dividends for the year to \$2.40, against \$2.10 the preceding year. The company's earnings for the year from operations are estimated at \$9 per share, and in addition it shows net available for common stock up to \$4 per share, through sale of its fireproofing division to the Truscon Steel Co., Youngstown.

During the past year the Newton Steel Co., Youngstown, installed producer gas equipment for its full-finishing 20-mill sheet plant at Newton Falls, Trumbull County, Ohio, and abandoned powdered coal equipment, installed several years previously. Directors declared for the fourth quarter an extra cash dividend of 50 cents per share on common stock, in addition to the regular payment of 50 cents, bringing cash dividend disbursements for the year to \$2.50. In 1923, the company paid \$2.40 per share on its common stock.

Trade Changes

W. H. Nicholson & Co., manufacturer of automatic eliminators, piston operated super traps, weight operated traps, etc., have recently appointed as exclusive representatives the following concerns in the Southeastern States: A. K. Miller Engineering Co., Mobile, Ala., and New Orleans, will handle the Louisiana, Mississippi, Southern Alabama and Florida. Smith-Meadow Supply Co., Birmingham, will cover the northern half of Alabama. J. R. Whitman, Atlanta, will cover Georgia, and M. K. Moore Co., Charleston, S. C., will cover North and South Carolina.

The Tool Equipment Sales Co., 18 South Clinton Street, Chicago, has been appointed exclusive factory representative of the Bicknell-Thomas Co., Greenfield, Mass., manufacturer of tapping equipment. A complete stock will be maintained for the convenience of the trade in the Chicago territory.

The Ideal Concrete Machinery Co., Cincinnati, has appointed the Ginsberg-Penn Co., 18 East Forty-first Street, as agent in New York. Stock will be carried and the Ginsberg-Penn Co. will take care of sales and service complete. Frank Ginsberg, Hamilton Penn and E. G. Robinson are in charge of the main office. The service station and warehouse are located at 220 East 134th Street, New York.

The Independent Pneumatic Tool Co., Chicago, announces the opening of a branch sales office and service station at 1103-4 Genesee Building, Buffalo, for the convenience of customers in western New York. A complete assortment of Thor pneumatic tools and electric tools, repair parts, rivet sets, chisel blanks, air hose, hose couplings and other accessories will be carried in stock to fill emergency orders. Joseph P. Fletcher is manager.

The Union Electric Mfg. Co., Milwaukee, announces the opening of a New York office at room 346, Hudson Terminal Building, 30 Church Street, under the direction of A. J. Heldt.

Harry Vissering has disposed of his interest in Harry Vissering & Co., 14 East Jackson Boulevard, Chicago, and stockholders decided, Nov. 2, to change the name of the corporation to the Viloco Railway Equipment Co., Inc. G. S. Turner is president. Directors include Charles R. Long, Jr., G. S. Turner, A. G. Hollingshead, Samuel W. Russell, Fred G. Zimmerman, W. H. Heckman, J. M. Monroe, J. S. Lemley, C. W. Ploen and G. E. Johnson.

The Buckeye Sales Co., Cleveland, dealer in scrap metals, is moving to 3310 East Seventy-ninth Street, Cleveland, where it will have larger quarters and better shipping facilities. William Bass is president and S. H. Hirsch is treasurer.

Offices of the Penn Seaboard Steel Corporation and Tacony Steel Co., since Dec. 14, have been located at New Castle, Del. The president's office and Philadelphia district sales office will remain at 1417 Sansom Street, Philadelphia.

The Beilman Water Heater Co. has been incorporated to take over the business at 448 and 450 Niagara Street, Buffalo, of which W. E. Beilman has been sole owner, in the manufacture of the Beilman-Seamans' automatic water heaters and other lines of metal work.

The Dayton Bronze Bearing Co., Dayton, Ohio, has acquired the machinery and other assets of the Air Friction Carburetor Co., Dayton, from Murray Weir, receiver.

The Owens Bottle Co., Toledo, Ohio, has acquired ownership of the Charles Boldt Glass Co., Cincinnati, which operates bottle manufacturing plants at Cincinnati and Huntington, W. Va.

The Consolidated Machine Tool Corporation of America has closed its Pittsburgh office and sales of the Betts line of machinery hereafter will be handled by the Brown & Zortman Machinery Co., 327 Second Avenue, Pittsburgh, and the J. S. Miller Machinery Co., 3 Wood Street, Pittsburgh. The former firm will handle the planers 84 in. and larger, engine lathes 42 in. and larger and the entire line of boring mills. The Miller company will handle the engine lathes 26 in. to 36 in. inclusive and the planers from 36 in. to 72 in. inclusive. The Brown & Zortman Co. for some time has had the Pittsburgh district agency for the Hilles & Jones line of the Consolidated corporation. The line of the Newton Machine Tool Co., another Consolidated subsidiary, will continue to be sold through the Laughlin-Barney Machinery Co., Union Trust Building, Pittsburgh.

The W. W. Pattison Supply Co., Cleveland, has opened an office at room 200, Columbian Building, 35 East Gay Street, Columbus, where it will have sales representatives for its iron-working machinery, wood-working tools and its supply department.

The International Oxygen Co. paid its regular semi-annual dividend of 3 per cent on Dec. 1, on all outstanding stock of the company.

Plans of New Companies

The Marathon Machinery & Equipment Co., care of E. P. Phillips, 15 Park Row, New York, has been organized with a capital of 100 shares of stock, no par value, to manufacture machinery and parts. The company is factory representative for Platt Iron Works, Dayton, Ohio; Sotter Brothers, Pottstown, Pa.; International Clay Machinery Co., Dayton, Ohio; Paul R. Jordan & Co., Indianapolis.

The Peerless Wrench Co., care of J. T. Cashman, 30 Church Street, New York, has been organized with a capital of \$100,000 to manufacture wrenches and kindred specialties.

The Alloys Foundry Co., Detroit, has been organized, with a capital of \$75,000 and has leased for a period of years the building at 192 Mt. Elliott Avenue, Detroit. The plant is in active operation. The work is crucible and electric furnace melting, including aluminum, copper and brass, but more practically alloys of nickel, chromium, cobalt, etc., for use in heat resisting metals.

The Universal Nipple Works, Inc., 24-26 Somme Street, Newark, N. J., has been organized to manufacture plumbers' nipples, for the jobbing trade. Manufacturing is done in the company's plant. Steel pipe is purchased.

The Economy Metal Products Co., 1935 West Sixty-second Street, Los Angeles, has been organized to take over the assets and business of the Economy Products Corporation and, by the purchase of additional equipment and patentable ideas, to put the business on a better earning basis. The principal article of manufacture is a patented furring device known as the "Economy" stucco nail, that has a distribution already throughout the United States.

The Goodman Electric Machinery Co., Newark, N. J., has been organized to handle electric welders, lifting magnets and electric hoists. In addition to buying, rebuilding and then reselling these machines, the company does a rental business.

The Protex Chain Co., Inc., Waynesboro, Pa., has been organized with an authorized capital of \$25,000 to manufacture and deal in automobile non-skid chains and kindred products. The product is being manufactured by contract.

Industrial Notes

Exclusive manufacturing and selling rights in the eleven Western States (the entire territory west of the Rocky Mountains) for the Dayton hollow-steel truck wheel, manufactured under the Walther patents, have been taken over by the Kay-Brunner Steel Casting Co. of Los Angeles, by virtue of a contract with the Dayton Steel Foundry, Dayton, Ohio. This wheel is a standard unit in the construction of nationally-known trucks. In addition to the Dayton wheel, the Kay-Brunner company is placing on the market new types of dual pneumatic disk steel wheels, single pneumatic disk wheels and single hollow spoke wheels. New equipment has been added to the company's plant and more employees will be hired.

Horace T. Potts & Co., East Erie Avenue and D Street, Philadelphia, have been appointed distributors by the Page Steel & Wire Co. for Maryland, excepting the three western counties, and for the District of Columbia, for their wire fence, panel partitions, etc. The Potts company has opened a branch office in the Builders' Exchange Building, 15 East Fayette Street, Baltimore, and have appointed as district manager, Frank St. Clair, Jr., of the present fence department sales force. Mr. St. Clair is a graduate of the University of Pennsylvania and of the Engineering Department, Cornell University, and Captain of Engineers, U. S. A. He was construction engineer with the Phoenix Utility Co. at Camaguey, Cuba, and with the Imperial Reclamation District, Calexico, Cal.

For the fiscal year ended Sept. 30 the Canada Iron Foundries, Ltd., Montreal, showed earnings of \$350,209, as compared with \$339,769 in the preceding year. According to the president, the company's business for the period, measured both by value and tonnage of its sales, fell below that of 1924, and the average sales price was also reduced. While labor conditions remained unchanged, the company had an advantage over the previous year in the purchase of its principal raw materials, and as a final result, the operating profits for the period under review show a slight improvement. To the earnings for the year were added interest and exchange amounting to \$76,332, making a total of \$426,542. From this was deducted depreciation at \$195,059; interest including provision for sinking fund at \$64,491; maintenance at \$9,891, and preferred dividends at \$155,112, leaving a surplus for the year at \$1,989.

Machinery Markets and News of the Works

BUSINESS IS QUIETER

Year-End Volume Is Fairly Satisfactory, However, and Inquiries Gain

General Electric Co. Issues a List of About 30 Tools, Which Is Week's Largest Inquiry

ALTHOUGH machine tool business shows the customary year-end slowing up, the volume is more satisfactory than was expected. A good deal of business is pending and inquiries are more numerous, indicating that many prospective purchasers are postponing their decisions until after the first of January. It is estimated that the total sales by machine tool

builders this month will approximate 60 per cent of November's business, the latter having been the best month of the year.

Outstanding among numerous inquiries received during the week is one from the General Electric Co., Schenectady, N. Y., for about 30 tools, mostly milling machines, turret lathes, engine lathes and grinding machines. An export inquiry which has aroused interest at Cincinnati is for 13 crankshaft and three gap lathes for Russia.

Railroad buying in larger volume is expected early in the new year. Several roads which center at Chicago are reported to be preparing lists of tool requirements. Purchases of the Norfolk & Western have been extended through the past week, a large part of its requirements now having been ordered.

New York

NEW YORK, Dec. 22.

A LIST issued by the General Electric Co., Schenectady, N. Y., and calling for bids on about 30 tools, including turret lathes, engine lathes, milling machines and grinders, is the outstanding development in the Eastern machine tool trade. The General Electric Co.'s Sprague Electric Works at Bloomfield, N. J., has purchased a number of tools. These now being inquired for, however, are understood to be mostly for Schenectady. December is making a fair record in machine tool sales, but the volume may not equal that of November, except in some isolated cases. The New York Central has bought a 90-in. locomotive axle journal turning lathe from the Niles-Bement-Pond Co. The Farrel Foundry & Machine Co., Ansonia, Conn., bought a 12 ft. x 10 ft. x 35-ft. planer. The George Hall Corporation, Ogdensburg, N. Y., bought a 1100-lb. steam hammer. The Bullard Machine Tool Co., Bridgeport, Conn., bought a 10-in. vertical shaper. The Singer Mfg. Co., Elizabethport, N. J., bought two automatic lathes.

Weiss & Biheller, Inc., 584 Broadway, New York, is in the market for machinery for the manufacture of bolts and nuts.

The Columbia Metal Box Co., 228 East 144th Street, New York, has purchased property on Rider Avenue, 142nd to 144th Street, for a proposed three-story factory, for which plans will soon be drawn.

John De Hart, 1039 Fox Street, Bronx, New York, architect, is completing plans for a two-story automobile service, repair and garage building, 100 x 200 ft., to cost \$120,000 with equipment.

The Bush Terminal Co., 100 Broad Street, New York, has plans for an eight-story addition to its industrial warehouse on Thirty-ninth Street, extending to First Avenue, South Brooklyn, 200 x 200 ft., reported to cost \$500,000. William Higginson, 15 Park Row, New York, is architect.

The Board of Transportation, 49 Lafayette Street, New York, will push erection of the new car construction and repair shops for the Brooklyn-Manhattan Transit system, at Coney Island, to cost in excess of \$2,000,000 with machinery. It is purposed to have the initial shop unit ready for service by the close of 1926. Gerhard M. Dahl is chairman of the board.

The Sandor Paper Box Co., 169 Franklin Avenue, Brooklyn, has plans for a two-story addition, 60 x 200 ft., to cost \$100,000 with machinery. William Hohauer, 1400 Broadway, New York, is architect.

The Interstate Plumbing Co., Albany, N. Y., care of C. H. Gardiner, 46 Pearl Street, architect, will ask bids early

next year for a new mechanical, distributing and storage plant on Broadway, 40 x 150 ft., with pipe-cutting and threading shop, etc., to cost \$100,000 with equipment.

George Dress, 103 East 125th Street, New York, architect, has filed plans for a six-story automobile service, repair and garage building at 213-19 East Ninety-first Street, to cost \$200,000 with equipment.

The Michigan Artificial Ice Products Corporation and the Germantown Cooperative Fruit Growers' Association, George Levey, 101 Real Estate Exchange Building, Detroit, in charge, are considering the erection of a three-story cold storage and refrigerating plant at Germantown, N. Y., to cost approximately \$100,000 with equipment. It is expected to begin work in the spring.

The International Power Securities Corporation, headed by J. E. Aldred of J. E. Aldred & Co., 42 Wall Street, New York, operating public utility properties, has disposed of a bond issue of \$10,000,000, a portion of the fund to be used for extensions and improvements in power plants and systems, including those of the Edison General Italian Electric Co., Milan, Italy.

The Packard Motor Car Co. of New York, Broadway and Sixty-first Street, has engaged Albert Kahn, Inc., Marquette Building, Detroit, architect, to prepare plans for its proposed service and repair building, 115 x 400 ft., at Columbus Avenue and Sixty-first Street, to cost \$350,000.

The Concord Coal Co., Seventy-sixth Street and East River, New York, has leased a two-story coal pocket, storage and distributing yard to be erected at 434 East 101st Street by the East River Dock & Supply Co., 80 Maiden Lane. Conveying, loading and other equipment will be installed.

The Brooklyn Metal Decorating Co., Brooklyn, has leased about 44,000 sq. ft. of space in buildings 30, 93 and 94, at the Bush Terminal, South Brooklyn, for a local plant.

The Federal Metal Bed Co., 818 Clinton Street, Hoboken, N. J., has awarded a general contract without competition to the Gunnison Construction Co., 116 West Thirty-ninth Street, New York, for a one and one-half story addition, 120 x 175 ft., to cost \$50,000. Otto Schlich, 136 Liberty Street, New York, is architect.

The Continental Paper Co., Bogota, N. J., has awarded a general contract to the Austin Co., Philadelphia, for a one-story addition and improvements in the present mill, to cost \$30,000.

F. L. Smith & Co., North Avenue, Elizabeth, N. J., operating a mechanical engineering works, have filed plans for a one-story machine shop to cost \$35,000.

The Tidewater Oil Sales Co., 11 Broadway, New York, has awarded a general contract to George H. Stadel, Shippan Avenue, Stamford, Conn., for a storage and distributing plant on North Avenue, Dunellen, N. J., to cost about \$80,000 with equipment.

The Havell Mfg. Co., 284 Washington Street, Newark, manufacturer of metal products, has awarded a general

contract without competition to Joseph Weisberger, 96 Hunterdon Street, for its proposed one-story plant, 85 x 175 ft., at Irvington, to cost \$36,000. J. Fred Cook, 9 Clinton Street, is architect.

The Essex Brass Smelting Co., 214-22 Riverside Avenue, Newark, has filed plans for a one-story foundry to cost about \$13,000 with equipment.

Ovens, power and conveying machinery and other equipment will be installed in the proposed plant, 125 x 200 ft., to be erected by S. Cushman Sons, Inc., 51 East Burnside Avenue, New York, to cost \$400,000.

Officials of the Long Island Lighting Co., 50 Church Street, New York, and the Easthampton Lighting Co., Easthampton, L. I., have formed the Eastern Seaboard Power Corporation, to take over a controlling interest in both organizations. Expansion is planned in power facilities and transmission lines, including additional equipment.

New England

BOSTON, Dec. 21.

MACHINE tool business remains quiet. One local house the past week sold a No. 3 milling machine, a wet tool grinder and three bench lathes, all used tools, to three local companies, which were among the largest sales reported. Saturday, Dec. 26, practically all the Boston machine tool houses will be closed and salesmen will not go out for business until after Jan. 1. Machine tool dealers look forward to the first half of 1926 as being prosperous. It is stated that if one-half of the inquiries now out are closed during the first six months of 1926, machinery dealers will better the business of the first six months of 1925.

Demand for small tools holds up remarkably well and is running in excess of December last year. Some makes of small tools cannot be delivered within three to five weeks.

The Stanley Works, Inc., New Britain, Conn., has awarded contract for the construction of two factory buildings, one 110 x 250 ft., to be used for gaging rolls and annealing furnaces, and the other, 46 x 82 ft., for a machine shop addition. Work will begin immediately.

Sketches are being made by Charles T. Main, 200 Devonshire Street, Boston, for a boiler house for the Gillette Safety Razor Co., 41 West First Street, South Boston.

Plans for a power house to cost \$75,000, without equipment, for the Central Maine Power Co., Augusta, Me., will be ready next spring. F. W. Mason, Waterville, Me., the company's engineer, is in charge.

The Chapman Valve Mfg. Co., Indian Orchard, Springfield, Mass., has taken out a permit to erect a two-story, 32 x 42 ft. addition to cost about \$15,000.

The New York, New Haven & Hartford Railroad has purchased for the New England Transportation Co., its motor bus subsidiary, 20 parlor motor coaches from the Yellow Coach Mfg. Co., Chicago, 16 parlor motor coaches from the Pierce Motor Car Co., Buffalo, and 15 coaches from the Fageol Motors Co., Oakland, Cal.

The Rasmussen Mfg. Co., Bradleyville Road, Waterbury, Conn., is considering rebuilding its machine shop, 50 x 150 ft., and supply building adjoining, 30 x 90 ft., destroyed by fire Dec. 12, with loss estimated at \$60,000 including equipment.

The Central Connecticut Light & Power Co., East Hampton, Conn., will make extensions in its power plant at Leesville, Conn., to include the installation of a turbine and other equipment.

The Metropolitan Charcoal Co., East Dedham, Mass., is considering rebuilding the portion of its plant recently destroyed by fire, with loss estimated at \$45,000 including equipment.

The United Electric Light Co., Springfield, Mass., has acquired property adjoining its plant at Bond and North Streets, 87 x 120 ft., and contemplates an addition.

The Atlantic Screen & Wood Products Co., Roxbury, Boston, has awarded a general contract to Raymond A. Murray, Roxbury, for its proposed one-story and basement addition, 65 x 231 ft., with L-extension, 42 x 105 ft. James T. Ball, Boston, is architect.

The New Haven Clock Co., Franklin Street, New Haven, Conn., has awarded a general contract to F. Tagliatela, 137 Franklin Street, for a one-story addition.

The Springfield Gas Light Co., Springfield, Mass., has plans for a new meter house at 1230 Montgomery Street, Chicopee, Mass.

The Montpelier & Barre Light & Power Co., Montpelier, Vt., is disposing of a bond issue of \$584,000, a portion of the proceeds to be used for extensions and improvements.

The Jackson & Newton Co., 105 Portland Street, Boston, manufacturer of doors and other millwork products, will begin the erection of a new two and three-story plant at Medford, Mass., to cost about \$45,000.

Plans for a reorganization of the Uncas Paperboard Co., Norwich, Conn., are being arranged by creditors of the company and the business will be continued by Frank W. Brown, receiver. Authority has been given to raise a fund of \$10,000 for improvements in present equipment and the installation of additional equipment.

J. A. Tuck, Park Square Building, Boston, has completed plans for a one-story automobile service, repair and garage building, 100 x 300 ft., at 226 Pleasant Street, Malden, Mass., to cost \$160,000 with equipment.

C. I. Brink, Inc., 24 Gold Street, Boston, manufacturer of electric signs and displays, is planning a two-story addition to cost \$45,000.

The Sharon Box Co., Sharon, Mass., is said to be planning the purchase of a steam-operated pumping unit, with auxiliaries, for installation at its mill.

The Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., has awarded a contract to the Austin Co., Cleveland, for a one-story wire mill building, 85 x 160 ft., to be erected at its Rock Falls, Ill., plant.

Philadelphia

PHILADELPHIA, Dec. 21.

LOUIS ESHNER & SON, 950 North Eighth Street, Philadelphia, manufacturers of wire goods, are considering rebuilding of the portion of their plant destroyed by fire Dec. 17, with loss reported at \$200,000 including equipment.

Packard, Inc., 319 North Broad Street, Philadelphia, local representative for the Packard automobile, has awarded a general contract to the Turner Construction Co., for a new service, repair and headquarters building at 3221-39 North Broad Street, to cost \$750,000, with equipment. Phillip S. Tyre, 1509 Arch Street, is architect. It will be four stories, 200 x 265 ft.

Himmelein & Bailey, Inc., 246-48 Chestnut Street, Philadelphia, manufacturer of mechanical belting, etc., is arranging for the early removal of its plant to Camden, N. J., where buildings recently were acquired at Walnut Street, totaling 89,000 sq. ft. of floor space. Extensions and improvements are under way and additional machinery to cost approximately \$50,000 will be installed. William G. Oakes is secretary and treasurer.

The General Electric Co., Witherspoon Building, Philadelphia, is completing arrangements for an addition to its branch plant at Sixty-eighth Street and Elmwood Avenue. It will be six stories and basement, known as unit No. 10, to cost \$450,000. Harris & Richards, Drexel Building, are architects.

The Kardon Paper Box Co., 224 Pine Street, Philadelphia, will rebuild the portion of its three and one-story plant damaged by fire Dec. 10, with loss estimated at \$20,000.

The William H. Jaeger Products Co., Trenton, N. J., has been organized to take over the property of the Trenton Patent Mfg. Co., 112 Murray Street, manufacturer of piston rings and kindred specialties, in receivership. The new company will remodel the works and resume operations at an early date for the same line of production. Increased output will be arranged. William H. Jaeger is president, and Adolph G. Miller, Jr., secretary and treasurer.

The Hinde & Dauch Mfg. Co., Sandusky, Ohio, manufacturer of corrugated paper containers, etc., has begun the erection of an addition to its branch plant at Gloucester, N. J., reported to cost \$40,000.

The State Board of Education, Trenton, N. J., has approved preliminary plans for the establishment of a vocational school at Mount Holly, Burlington County. An existing building will be taken over and equipment installed. The Board of County Freeholders will arrange the necessary appropriation.

The West Pittston School District, West Pittston, Pa., Paul Bevan, president, plans the installation of manual training equipment in its proposed two-story and basement high school to cost \$250,000, for which bids will be asked in January. Mark & Sonn, and Thomas Foster, Coal Exchange Building, Wilkes-Barre, Pa., are architects.

Christian W. Lynch, Harrisburg, Pa., one of the largest stockholders in the Harrisburg Foundry & Machine Works, Inc., and formerly head of the company, which has been in receivership, has acquired the property at a public sale for \$71,000,000, subject to first and second mortgages of \$88,000

The Crane Market

THERE is an increasing volume of inquiry in the market for electric overhead cranes and considerable prospective business in locomotive cranes, but with the holidays here, activity has decreased and most of the current business is expected to go over until next year. The inquiries of the Phoenix Utility Co., 71 Broadway, now include a 100-ton and 60-ton overhead cranes for domestic use, a 30-ton electric crane for Ecuador and a 10-ton hand power crane.

Among recent purchases are:

United States Metals & Refining Co., Carteret, N. J., a 15-ton electric locomotive crane from the American Hoist & Derrick Co.

Indiana Bridge Co., Muncie, Ind., a 20-ton used Browning locomotive crane from Philip T. King, New York.

Du Bois Lumber Co., Lake, Miss., a standard log-loading locomotive crane from the American Hoist & Derrick Co.

Edward Hines Yellow Pine Co., Lumberton, Miss., a standard log-loading locomotive crane from the American Hoist & Derrick Co.

Central Maine Power Co., Waterville, Me., a 60-ton electric overhead crane and several tainter gates and hoists from the Whiting Corporation.

New York Central & Hudson River Railroad, New York, a 10-ton, 4-motor gantry crane for brick handling in Thirtieth Street yard, New York, and an 18-ton, 29-ft. 8-in. span, 3-motor overhead crane for the Harmon shops, from the Cleveland Crane & Engineering Co.

Bethlehem Steel Co., Bethlehem, Pa., 28 hand power stripping cranes, $\frac{1}{2}$ -ton capacity for Sparrows Point works from the Cleveland Crane & Engineering Co., tramrail division, and 28 electric hoists, $\frac{1}{2}$ -ton capacity from an unnamed builder.

National Forge & Tool Co., Irvine, Pa., a 5-ton single I-beam hand power crane from the Chisholm-Moore Mfg. Co.

and \$100,000, respectively. This was the fifth attempt to sell the plant. It is said that the new owner will reorganize the company and resume at the works.

To provide for the proposed acquisition of the Penn-Allen Cement Co., Nazareth, Pa., by the Dexter Portland Cement Co., occupying adjoining site, the last noted company is disposing of a bond issue of \$2,200,000, providing as well for proposed improvements and equipment at the Penn-Allen mill. The Dexter mill will be continued in service. John A. Miller is president of the purchasing company.

The Bingen Brick Mfg. Co., Bethlehem, Pa., is arranging for the immediate rebuilding of the portion of its plant destroyed by fire several weeks ago with loss of \$70,000 including machinery.

W. Reisbord, 4437 Ludlow Avenue, Philadelphia, operating a structural steel works, has plans for a new two-story fabricating shop, 20 x 50 ft., to cost \$21,000.

The West Virginia Pulp & Paper Co., 200 Fifth Avenue, New York, has awarded a general contract to the Morton C. Tuttle Co., Park Square Building, Boston, for a one-story addition to its plant at Williamsburg, Pa., 80 x 175 ft., reported to cost \$75,000.

The Ochre Producers, Inc., P. O. Box 643, Allentown, Pa., is arranging to purchase equipment for its plant at Hancock, Pa., including conveyors and elevators, grinders, pulverizers, steam shovel, trucks, car unloaders, boiler apparatus and accessories.

The Kimble Glass Co., Vineland, N. J., manufacturer of laboratory glassware, will proceed with the construction of a three-story and basement addition, 90 x 110 ft., to cost about \$85,000, for which a general contract has been awarded to the William P. Cameron Engineering Co., Fifteenth and Chestnut Streets, Philadelphia.

South Atlantic States

BALTIMORE, Dec. 21.

THE Pangborn Corporation, Hagerstown, Md., manufacturer of foundry equipment, is said to have plans under advisement for a two-story addition to cost \$50,000 with machinery. Thomas W. Pangborn is president.

The Black & Decker Mfg. Co., East Pennsylvania Avenue, Baltimore, manufacturer of electric drills, grinders, etc., has awarded a general contract to W. H. Sands, Baltimore, for a one-story addition to its plant in the Towson district, 100 x 200 ft., to be equipped as a machine shop.

The Washington Steel Products Co., 815 Fifteenth Street, N. W., Washington, has inquiries out for six steel flat cars, 42-in. gage, about 20-in. diameter wheels.

Western Gas Construction Co., Fort Wayne, Ind., a 15-ton, 3-motor and a 5-ton, 3-motor overhead traveling crane from the Shaw Electric Crane Co.

A. F. Anderson Iron Works Co., 5844 Loomis Street, Chicago, a 10-ton, 80-ft. span, 5-motor overhead traveling crane and a 5-ton, 50-ft. span, 5-motor crane through Page & Ludwick, Chicago, from the Milwaukee Electric Crane & Mfg. Co.

Richard Wilcox Co., Aurora, Ill., a 3-ton, 12-ft. span, 1-motor transfer crane and a 2-ton, 33-ft. span hand power crane, through Page & Ludwick, Chicago, from the H. D. Conkey Co.

Willys-Overland, Inc., Toledo, Ohio, one 5-ton, two 7½-ton and one 10-ton electric traveling crane from the Shaw electric Crane Co.

The following cranes have been recently closed by the Alliance Machine Co.: Bethlehem Steel Co., one 75-ton and one 10-ton overhead cranes, one 5-ton bucket handling crane and one 150-ton ladle crane; Central Steel Co., Massillon, Ohio, a 15-ton standard and a 15-ton bridge drive crane; General Electric Co., Schenectady, N. Y., a 30-ton crane; Illinois Steel Co., Chicago, two 10-ton cranes and a 10-ton hand power trolley; National Tube Co., Pittsburgh, a 3½-ton crane; McKinney Steel Co., Cleveland, a 5-ton magnet handling crane; Youngstown Sheet & Tube Co., Youngstown, Ohio, a 10-ton and 15-ton cranes; Mt. Vernon Bridge Co., Mt. Vernon, Ohio, a 30-ton crane; Phoenix Iron Works, Meadville, Pa., a 7½-ton and 30-ton cranes; Worth Steel Co., Claymont, Del., four 10-ton cranes and a 10-ton and 30-ton trolleys; American Locomotive Co., New York, a 5-ton floor type revolving boom crane; Tata Iron & Steel Co. in India, a 100-ton trolley; Detroit Edison Co., Detroit, two 12-ton monorail trolleys; Inland Steel Co., Chicago, a 15-ton and 30-ton trolleys; and the American Steel & Wire Co., Chicago, a 15-ton trolley.

The Board of Aldermen, Kinston, N. C., is asking bids until Jan. 15 for an electric-operated vertical pump and appurtenances with capacity of 500 gal. per min., in connection with waterworks improvements. W. B. Coleman is city clerk.

W. L. Peace, Oxford, N. C., has inquiries out for an oil or gasoline engine, about 60-hp. capacity, for operating cotton-ginning machinery.

The National Casket Co., 3 Park Square, Boston, is said to have plans under way for a new branch plant at Woodfin, vicinity of Asheville, N. C., to cost \$250,000 with machinery. W. H. Donnell is manager.

The Baltimore & Ohio Railroad Co., Baltimore, is considering plans for extensions in its car and locomotive repair shops at Cumberland, Md., to cost approximately \$200,000 with equipment.

The Greenwood Welding Co., Greenwood, S. C., plans the purchase of wood-working machinery for a local plant for the manufacture of textile bobbins.

Officials of the American Water Works & Electric Co., 50 Broad Street, New York, have formed a subsidiary, the West Penn Electric Co., capitalized at \$172,000,000. It will take over a group of utilities in Maryland and western Pennsylvania and contemplates expansion in power plants and systems.

The Virginia-Carolina Chemical Co., Columbus, Ga., recently acquired by Drane Bullock, Wildwood Street, and associates, to manufacture fertilizer products, has plans under way for extensions, to cost \$80,000 with machinery. It will be known as the Columbus Fertilizer Co.

The Liles Novelty Co., State Street, Black Mountain, N. C., recently incorporated with a capital of \$100,000 to manufacture metal-wood novelties, plans the installation of coil springing machines and other equipment. P. H. Dinwiddie is secretary.

The International Vegetable Oil Co., Citizens' and Southern Bank Building, Atlanta, Ga., recently reorganized, is completing plans for the establishment of a new cottonseed oil mill at Memphis, Tenn., to cost \$50,000 with equipment. L. P. Brown, Jr., is president.

The Southern Can Co., 717 South Wolfe Street, Baltimore, is arranging for stock issue to total \$1,250,000, the proceeds to be used in connection with its recent purchase of the local plant of the Columbia Graphophone Corporation and 66 acres, to be known as the Gibbs Industrial Building. A portion of the structure is now being remodeled. The present factory will be removed to that location.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a 100-hp. oil engine, belted type, and for a 2-yd. capacity dragline bucket, Page type.

Charles Pohlig, 2407 East Franklin Street, Richmond, Va., operating a paper-box manufacturing plant, has awarded a general contract to James Foss' Sons, Twenty-fifth and Franklin Streets, for a three-story addition, 45 x 65 ft., to cost \$27,000, of which about \$12,000 will be expended for new equipment. Scot Rice, Richmond, is architect.

The Board of District Commissioners, District Building, Washington, is said to be planning the installation of manual training equipment in its proposed two-story and basement Francis Junior high school at Twenty-fourth and N Streets, N. W., estimated to cost \$475,000. A. L. Harris, District Building, is architect.

P. C. Painter, city manager, Greensboro, N. C., is asking bids until Jan. 5 for a 500,000-gal. capacity steel tank and tower for the municipal waterworks.

The Warren Co., 875 East Fair Street, Atlanta, Ga., manufacturer of iron and other metal castings, refrigerators, etc., is planning for the construction of an addition to double the present output, to cost \$55,000. V. P. Warren is president.

J. M. Mast & Co., Clover, Va., have inquiries out for a number of small electric motors.

The Board of Education, Staunton, Va., is said to be planning the installation of manual training equipment in a proposed high school estimated to cost \$220,000. William B. Ittner, Board of Education Building, St. Louis, is architect; T. J. Collins & Son, Staunton, are associate architects.

The Mallory Machinery Corporation, 522 Light Street, Baltimore, is in the market for a used 200 hp. horizontal return tubular boiler, with a rated capacity of 200 lb. pressure.

Chicago

CHICAGO, Dec. 21.

SALES of machine tools are being well maintained, considering the nearness of the holiday season and the inventory period. This is more particularly true of business in the general run of smaller tools and used equipment. Inquiries are being received in good number, although in many instances prospective buyers state that they will not buy until after the first of the year. Railroads are reported as being very active in the preparation of budgets, and the trade looks for the early receipt of a long list from one of the major railroads terminating at Chicago. Several Western railroads operating through the Rocky Mountain region are also said to be about to enter the market.

The Denver Rock Drill Mfg. Co., Denver, has purchased a forging machine and is inquiring for several other types of tools. The International Harvester Co., Chicago, has placed several automatic nut tappers, a high speed drill and several lathes.

The Nash Motors Co., Kenosha, has bought a surface grinder for its Kenosha plant, and the Yellow Sleeve Valve Engine Works, East Moline, Ill., purchased several lathes, a 14-inch vertical surface grinder, a jig boring machine and a number of items of used equipment. A St. Louis motor manufacturer placed three lathes, and a Chicago district can manufacturer purchased a lathe. The Bendix Brake Corporation, South Bend, Ind., and the Hannum Mfg. Co., Milwaukee, are inquiring for various types of machine tools. The A. O. Smith Corporation, Milwaukee, bought a 13-in. Pratt & Whitney lathe and the Harley-Davidson Co., Milwaukee, bought a thread milling machine.

The Great Lakes Electric Mfg. Co., 11 South Desplaines Street, Chicago, will erect a one-story manufacturing building, 75 x 122 ft., at 653 North Kedzie Avenue. Ralph Follett & Son Construction Co., 5 North LaSalle Street, is the general contractor.

R. Oates & Son, 2543 North Crawford Avenue, Chicago, will build a one-story stone cutting plant, 61 x 125 ft. R. H. Mazeety, 14 West Washington Street, is architect.

Fire, Dec. 15, caused a \$10,000 loss in the sand blasting department of the Roper Corporation, Rockford, Ill., manufacturer of gas stoves.

The Building Brick Co. of Illinois, Inc., will build a power house at its Brazil, Ind., plant at an estimated cost of \$400,000.

The State Board of Administration, State Capitol Building, St. Paul, Minn., will soon ask bids for the construction of a proposed power plant at the State Teachers' College, Duluth, Minn., to cost approximately \$275,000. C. H. Johnston, State Capitol Building, is architect.

The Crown Stove Works, Inc., 4631 West Twelfth Street, Cicero, Ill., has asked bids on a general contract for a new three-story and basement building, 50 x 100 ft., to cost \$35,000. Wolf, Sexton, Harper & Trueax, 7 West Madison Street, Chicago, are architects.

The Beardsley & Piper Co., Inc., 2541 North Keeler Avenue, Chicago, operating a foundry and machine shop, has acquired property at the rear of its present plant, totaling about 80,000 sq. ft., for a foundry addition. Elmer O. Beardsley and Walter F. Piper head the company.

Fire, Dec. 7, destroyed a portion of the plant of the Dakota Sash & Door Co., Aberdeen, S. D., with loss of \$45,000. It is planned to rebuild.

The Itasca Paper Co., St. Paul, Minn., has plans for extensions in its mill at Grand Rapids, Minn. Additional machinery will be installed. Expansion will also be arranged in the power department. The entire project is estimated to cost \$80,000.

The Marshalltown Mfg. Co., 901 East Nevada Street, Marshalltown, Iowa, manufacturer of presses, gages and kindred machinery, has tentative plans for a three-story addition, 60 x 75 ft., to cost \$90,000 with equipment. It is expected to begin work in the spring.

The Montgomery Canning Co., Montgomery, Minn., plans the construction of a power house in connection with a proposed new canning plant, for which bids will be asked on general contract before the close of the month. The complete project will cost about \$60,000. Ralph W. Richardson, Zenith Building, St. Paul, Minn., is architect.

The Board of Education, Durand, Ill., Lloyd Birdsell, secretary, plans the installation of manual training equipment in a proposed two-story community high school to cost \$100,000. Foundations will soon be laid. Edgar Payne, 429 Main Street, Carthage, Ill., is architect.

The City Council, Muscatine, Iowa, has called a special election on Dec. 28 to approve a bond issue of \$100,000, proceeds to be used for the construction of a municipal electric light and power house.

The Board of Education, 650 South Clark Street, Chicago, is said to be planning the installation of manual training equipment in a new three-story and basement high school at Union and 112th Streets to cost \$1,000,000, for which superstructure will soon begin. John Christenson is architect.

Buffalo

BUFFALO, Dec. 21.

CONTRACT has been awarded by the Crane Co., 836 South Michigan Avenue, Chicago, to John B. Pike, 1 Circle Street, Rochester, N. Y., for a three-story and basement factory branch and distributing plant, 50 x 62 ft., at Rochester, to cost about \$60,000. Leander McCord, Powers Building, Rochester, is architect.

The Chevrolet Motor Co., 1001 East Delavan Avenue, Buffalo, has plans under way for a new loading dock at its local plant, with hoisting, conveying and other machinery estimated to cost \$150,000.

Merger plans have been arranged by the L. C. Smith Typewriter Co., Syracuse, N. Y., and the Corona Typewriter Co., Inc., Groton, N. Y., under the direction of Ford, Bacon & Davis, Inc., 115 Broadway, New York, engineer, which acquired control of the first noted company about a year ago. The consolidated company will have assets totaling \$12,000,000, and will be operated under a new name. Plans are under way for expansion in manufacture. John N. Derschug, president of the Syracuse Washer Corporation, Syracuse, is interested in the merger.

The Crouse-Hinds Co., North, Seventh and Wolf Streets, Syracuse, manufacturer of condulets and other electrical specialties, has plans for a new two-story forge shop. Gaggin & Gaggin, University Building, are architects.

The Wickwire Spencer Steel Corporation, River Road, Buffalo, is reported to be contemplating extensions and improvements at its local plant to cost in excess of \$100,000, including the installation of additional equipment.

The Art Metal Construction Co., Jones Street and Gifford Avenue, Jamestown, N. Y., manufacturer of metal office equipment, will ask bids soon for a one-story addition, 100 x 550 ft., to cost about \$125,000. It will be equipped for storage, distributing and other operating service. H. K. Smith is president.

The Jordan Paper Box Co., 242 Salina Street, Syracuse, N. Y., has rejected bids recently received for extensions in its two and three-story plant, to cost about \$45,000 and expects to ask new bids in 60 to 90 days. La Vaute & Mulranen, Herald Building, are architects.

The Board of Education, Wellsville, N. Y., plans the installation of manual training equipment in its proposed new high school, to cost \$300,000, for which bids have been asked on a general contract. Tooker & Marsh, 101 Park Avenue, New York, are architects.

The Consolidated Machine Tool Corporation, has filed plans for a one-story steel and concrete factory at 565 Blossom Road, Rochester, to cost \$29,000 exclusive of machinery and equipment.

Cincinnati

CINCINNATI, Dec. 21.

THE decision of many purchasers of machine tools to postpone further buying until after the first of the year has adversely affected sales the past week. The volume of new business was smaller than in any previous week since August. Manufacturers, however, are confident that the letdown is only temporary, and is caused principally by the desire to wait until after the inventory period has passed to order new equipment. It is estimated that total sales this month will average approximately 60 per cent of those in November, which was the peak month of the year. Despite the decrease in fresh business, production is being maintained on a high plane to fill orders received the past two months, and there is little likelihood of a falling off in operations in the next six weeks.

While no outstanding sales have been made by local machine tool manufacturers, an inquiry from Russia for 13 crankshaft and three gap bed lathes has aroused interest. The Norfolk & Western Railroad bought six lathes in Cincinnati, distributing the business among three builders. The Cincinnati Planer Co. sold a 36-in. planer in Detroit and a similar machine in Indiana. The International Motor Co., Allentown, Pa., purchased two multi-cut lathes, and the Hayes Wheel Co., Albion, Mich., a No. 3 universal milling machine. The Tyler Co., Cleveland, took three lathes, while the Darling Valve & Mfg. Co. ordered a 27-in. x 18-ft. special lathe from a local builder. The Cadillac Motor Car Co. is reported to be inquiring for two lathes.

The International Machine Tool Co., Indianapolis, has booked two turret lathes for each of the following companies: The Marion Steam Shovel Co., Marion, Ohio; the American Laundry Machinery Co., Cincinnati; and the Pennsylvania Railroad for its Altoona, Pa., shops. Some ten orders for single machines have been covered also by this builder. The Niles-Bement-Pond Co. will supply two No. 5 carwheel lathes to the East Indian Railway, India, and a 4000-lb. double frame steam hammer to the Sao Paulo Railroad, Sao Paulo, Brazil.

The Road Grip Horseshoe Co., Columbus, Ohio, recently incorporated for \$10,000, has opened a factory at 866 Parsons Street to manufacture horseshoes designed by A. D. Cartwright, Toledo, Ohio, and James G. Ray, Columbus. The latter is vice-president and general manager.

The Slavin Co., Dayton, Ohio, scrap metal dealer, has awarded a general contract to the H. R. Blagg Co., Dayton, for a two-story warehouse for the storage of scrap copper and brass. Sol and Harry Slavin are the owners.

The Mast, Foos & Co., Springfield, Ohio, manufacturer of pumps, windmills and machinery, suffered a loss of \$500,000 on Dec. 17 when its main plant was destroyed by fire. Only the foundry, storage sheds, and lumber yards were saved. Plans are under way for rebuilding.

The Meade Pulp & Paper Co., Chillicothe, Ohio, contemplates the erection of a \$400,000 power plant.

The Austin Co., engineer and builder, Cleveland, has been awarded contract for a 75 x 142 ft. one-story steel frame building for a machine shop for the Oneida Machinery Co., Oneida, Tenn.

The Joint Owner Automotive Supply Co., Portsmouth, Ohio, will erect a four-story and basement garage and service station at an estimated cost of \$100,000. G. C. Senatt is general manager. Wesley Ridenour, First National Bank Building, Portsmouth, is the architect.

C. E. Campbell and Charles Addock, Logan, Ohio, contemplate the erection of a \$100,000 brick factory.

Bids have been asked by the Baldwin Piano Mfg. Co., 142 West Fourth Street, Cincinnati, for a one-story addition to its factory, 85 x 370 ft., to cost \$80,000. Lockwood, Greene & Co., Buhl Building, Detroit, are architects and engineers. G. W. Armstrong, Jr., is president.

J. F. Coxan, Wooster, Ohio, operating a local plant for the manufacture of electric and art illuminating fixtures, is arranging for an addition. Negotiations are being concluded with the Board of Trade for the erection of a new building, the present plant to be removed to the structure and additional machinery installed.

The Superior Auto Top Co., 16 Sprague Street, Dayton, Ohio, will defer until spring the erection of a proposed one-story addition, 60 x 100 ft., estimated to cost \$30,000. R. F. Coblenz heads the company.

The Tennessee Electric Power Co., Chattanooga, Tenn., has plans under way for extensions and improvements in the ice-manufacturing plant at Lenoir, Tenn., recently

acquired from the Lenoir Ice & Coal Co. Additional equipment will be installed. Raymond Forkner is president.

The Corley Mfg. Co., Williams Street, Chattanooga, Tenn., manufacturer of saw mill machinery, parts, etc., is completing plans for a new factory on property recently acquired, to cost \$50,000 with machinery. F. M. Balsden is president.

The Lexington Utilities Co., Lexington, Ky., operating electric light and power properties, is disposing of a preferred stock issue of \$1,500,000, a portion of the proceeds to be used for extensions and improvements. F. W. Bacon is vice-president.

The Holston River Power Co., Bristol, Tenn., J. R. Paul, 52 Wall Street, New York, head, has made application to construct and operate a hydroelectric generating plant on the South Fork of the Holston River, with capacity of 40,000 hp. The entire project, with transmission system, will cost \$7,000,000.

Detroit

DETROIT, Dec. 21.

BIDS have been asked on a general contract by the Cadillac Motor Car Co., 2860 Clark Street, Detroit, for a two-story addition, 150 x 208 ft., for parts and service department to cost \$85,000. Albert Kahn, Inc., Marquette Building, is architect.

The American Gear Co., Jackson, Mich., will proceed with the erection of an addition to cost approximately \$50,000, for which a general contract recently has been let to the Everett Winters Co., Book Building, Detroit. It will be 180 x 250 ft., equipped as a machine shop.

The Jaeger Portable Power Corporation, Detroit, recently formed with a capital of \$400,000, will operate a plant in this section for the manufacture of a portable woodworking machine and parts. The new company will be headed by Roy E. Wing, president Detroit Nut Co., 2456 Hubbard Street; Alfred T. Wagner, head A. T. Wagner Foundry & Supply Co., 280 McDougall Street; and Charles F. Jaeger, inventor of the machine.

The Hayes-Ionia Co., Grand Rapids, Mich., manufacturer of automobile bodies, is reported to be planning the construction of branch works at Memphis, Tenn., where option has been taken on a site. The initial plant will cost close to \$1,000,000 with machinery.

The Electric Refrigeration Co., Detroit, is being organized to take over and consolidate the Kelvinator Corporation, 2051 West Fort Street, the Nizer Corporation, 7424 Mackie Street, both Detroit, and the Grand Rapids Refrigerator Co., all manufacturers of electric-operated refrigerators, electric ice cream freezers, etc. The new company will have assets approximating \$10,000,000. Plans are under way for expansion. Arnold H. Goss, president of the Kelvinator Corporation, will be president of the new company.

The C. W. Mills Paper Co., 204 Ellsworth Avenue, Grand Rapids, Mich., has awarded a general contract to Sorenson & Gross, Houseman Building, for a five-story addition, 35 x 140 ft., to cost \$35,000. Frank P. Allen & Son, Houseman Building, are architects. H. R. Gezou is president.

W. E. Spencer, Jackson, Mich., has tendered a high bid of \$58,000, for the former local plant of the National Motors Corporation, Indianapolis, and is slated to secure the property. It is purposed to use the plant for the manufacture of automotive and other equipment. The National company has been operated under a receivership for a number of months.

The Ford Motor Co., Detroit, has asked bids on revised plans for a one-story addition to the motor division at the River Rouge plant, to cost \$150,000 with machinery. Albert Kahn, Inc., Marquette building, is architect.

The Muskegon Piston Ring Co., Muskegon, Mich., will proceed with superstructure for a one-story addition, 80 x 158 ft., to cost \$25,000, for which a general contract has been let to Eric Strom, Muskegon.

The Blackmer Rotary Pump Co., Grand Rapids, Mich., has filed plans for a one-story foundry to cost about \$50,000 with equipment. The Owen-Ames-Kimball Co., Grand Rapids, has the general contract.

The Board of Education, Royal Oak Township, Ferndale, Mich., William J. Norton, Woodward Street and Nine-Mile Road, president, plans the installation of manual training equipment in the proposed two-story addition to the Lincoln high school, estimated to cost \$160,000. H. T. Keyes, Free Press Building, Detroit, is architect.

The Wilcke-Armstrong Co., Detroit, has been organized with a capital of \$50,000 preferred stock and 30,000 shares of no-par common stock, to manufacture Justrite carburetors and telephone pay stations. Equipment is owned, but after March 1 the company will be in the market for material. L. Wilcke is one of the principals, care Adolph V. Wagenheim, 3507 Springle Avenue, Detroit.

Cleveland

CLEVELAND, Dec. 21.

MACHINE tool business has kept up in very good volume for December, although there has been some falling off. Orders are almost entirely confined to single machines. A local turret lathe manufacturer reports that sales this month have already exceeded expectations. Some fair inquiries for small lots of machines are pending and are expected to result in orders in January.

While not much business has come from the automotive industry, some Detroit car builders are still figuring on equipment. The Oakland Motor Car Co. bought a 16-in. lathe and the Ford Motor Co. purchased a 10-in. and a 6-in. vertical shaper. The Cadillac Motor Car Co. is expected to buy additional machinery for increasing the production of its present models. The Ohio Brass Co., Mansfield, Ohio, has purchased a 6-in. model B vertical shaper and the Mather Spring Co., Toledo, Ohio, has bought a shaper. The New York Central Railroad has sent out an inquiry for two 48-in. car-wheel boring machines and three No. 3 axle lathes.

The Cleveland Cap Screw Co. has acquired a site on East Seventy-ninth Street, adjoining its plant on East Eighty-first Street, and will erect a warehouse providing 9000 sq. ft. of floor space. This building is in addition to its three-story factory, plans for which were recently announced.

The Eaton Axle & Spring Co., Cleveland, has placed contract with the S. W. Emerson Co., for a one-story addition, 80 x 150 ft.

The Ferro Machine & Foundry Co., Cleveland, has placed contract with the S. W. Emerson Co., for two additional factory buildings.

The Ohio Power Co., Canton, Ohio, is arranging the sale of a bond issue of \$5,662,000, a portion of the proceeds to be used for extensions and improvements in plants and system, and acquisition of other properties. R. E. Breed is president.

The Fremont Metal Body Co., Fremont, Ohio, has placed contract for a one-story factory, 60 x 200 ft. for the manufacture of automobile and bus bodies.

The Fisher Brass Co., Delaware, Ohio, contemplates the construction of a one-story factory, 50 x 150 ft.

The American Can Co. has taken bids for the erection of a 50 x 270 ft. addition to its Toledo, Ohio, plant. Mills-Rhines-Bellman & Nordhoff are the architects.

St. Louis

ST. LOUIS, Dec. 21.

THE Acme Foundry & Machine Co., Coffeyville, Kan., is considering erection of a branch plant at Blackwell, Okla., consisting of three one-story buildings, 56 x 850 ft., 60 x 100 ft., and 40 x 60 ft., to cost \$75,000. E. L. Graham heads the company.

The Randolph-Perkins Co., 1210 First National Bank Building, Chicago, engineer, has preliminary plans under way for a hydroelectric power project on the Black River, near Leeper, Mo., for a company headed by W. H. Meredith, Poplar Bluff, Mo., reported to cost \$1,500,000 with transmission system.

The Acme Brick Co., N. P. Anderson Building, Fort Worth, Tex., will proceed with the construction of a new plant near Dawson, Okla., for an initial capacity of 50,000 brick per day. Additional machinery will be installed later to increase the daily output to more than 150,000. The plant will cost about \$100,000. George M. Giltinan is engineer, in charge.

Fire, Dec. 10, destroyed a portion of the plant of the Export Cooperage Co., Leslie, Okla., with loss reported at \$80,000 including machinery. Plans for rebuilding are under consideration.

The Common Council, Winchester, Kan., plans the installation of pumping equipment in connection with a proposed new waterworks, for which bonds for \$33,000 have been approved. E. T. Archer & Co., New England Building, Kansas City, Mo., are engineers.

The Twin City Brick & Tile Co., Van Buren, Ark., has tentative plans under advisement for extensions in its plant at Shibley, Ark., with the installation of machinery to double, approximately, the present output.

The Independent Cotton Oil Co., Wagoner, Okla., recently organized to take over the local plant of the Choctaw

Cotton Oil Co., is said to be contemplating extensions and the installation of additional equipment. The new company is headed by J. H. Patton and C. C. Hultquist, 726 Exchange National Bank Building, Muskogee, Okla.

The Camden Ice & Coal Co., Camden, Ark., is arranging for the construction of a new ice-manufacturing plant at Louann, Ark., to cost \$35,000.

The Bunker Hill & Sullivan Co., Joplin, Mo., operating local lead and zinc properties, is reported to have plans under consideration for a new electrolytic zinc plant to cost more than \$500,000 with machinery.

The Mapes Consolidated Mfg. Co., Griffith, Ind., recently formed under Delaware laws with capital of \$1,500,000, to manufacture paper products, will build a one-story plant, 200 x 250 ft., at North Kansas City, Mo., to cost about \$125,000 with machinery. Clifton B. Sloan, 321 East Eleventh Street, Kansas City, is architect.

The Glasco Electric Co., 721-27 North Eleventh Street, St. Louis, has awarded contract to the John J. Clark Construction Co., Arcade Building, for a four-story addition, 30 x 100 ft., to cost \$38,000. F. A. Husser, 4534 Fair Avenue, is architect.

The McClinton Mfg. Co., 300-302 S. Fifth Street, Fort Smith, Ark., is in the market for small swivel joints.

L. Segal, doing business in general merchandise, Portageville, Mo., desires to get in touch with manufacturers to make buckles of No. 13 gage cold rolled strip steel.

Milwaukee

MILWAUKEE, Dec. 21.

WITH the machine tool trade engaged in an effort to book new orders prior to the close of the year, there is a state of activity somewhat unusual for this period. It is meeting with good response and manufacturers expect to enter 1926 with the largest quantity of unfilled orders in at least two years. The fact that shops are probably busier than at any time since 1923, in consequence of which promptness of delivery has been adversely affected, doubtless is encouraging intending buyers to get nearby needs on makers' books.

The Kenosha, Wis., Specialty Brass Co. has acquired one of the buildings of the Winther Motors Co. group at Kenosha and will rebuild and re-equip as a foundry, die-casting and machine shop for immediate occupancy. It has outgrown its present shop at 915-917 Lester Street, but is unable to enlarge at this location. The new shop will provide 25,000 sq. ft., compared with 13,000 sq. ft. at present. Centrifugal milk pumps for creameries, brass fittings, bearing metal, etc., are manufactured. The company is capitalized at \$75,000. In 1920 a branch shop was opened at Albion, N. Y.

The Burgess Battery Co., Madison, Wis., manufacturer of dry cells, has purchased from the Moline Plow Co. plant No. 2 at Freeport, Ill. Work will begin immediately on remodeling the buildings for the production of batteries.

The Tayco Register Shield Co., Menasha, Wis., has been organized by C. M. Crawford to manufacture ornamental metal shields for registers and radiators and also to make heating elements and devices auxiliary to heating plants. A long-term lease has been taken on the former plant of the Keville Paper Co., Menasha, and a factory will be equipped immediately.

The A. J. Lindemann & Hoverson Co., First and Cleveland Avenues, Milwaukee, manufacturer of stoves, ranges, electrical heaters, toasters, etc., has let the general contract to the Klug & Smith Co., engineer, 69 Wisconsin Street, for a one-story addition, 40 x 200 ft. Albert L. Lindemann is vice-president and general manager.

The Val. Blatz Brewing Co., 604 Broadway, Milwaukee, has plans by William Gauger, 36 West Randolph Street, Chicago, and Henry G. Lotter, 427 Milwaukee Street, Milwaukee, associated architects, for a \$150,000 garage and service building, 60 x 156 ft., part two stories and basement. Construction bids are now being taken. Frank H. Gabel is secretary of the Blatz company.

The Fred T. Kern Co., 774 Third Street, Milwaukee, manufacturer of stone crushers, screening outfits and gravel plants, has leased the shop building, 60 x 75 ft., two stories, at 650-654 Lawton Place, and will transfer the operation at once, materially enlarging its equipment. Fred T. Kern is president and manager.

The Milwaukee Board of School Directors, Tenth and Prairie Streets, Milwaukee, will close bids Dec. 30 for the

construction of a \$350,000 junior high and pre-vocational school on Concordia Avenue, to be ready for occupancy Sept. 1, 1927. Frank M. Harbach is business manager of the board.

The Standard Brass & Iron Works, 1820 St. Paul Avenue, Milwaukee, has increased its capitalization from \$25,000 to \$100,000 for the purpose of enlarging its plant and production. The corporate style also has been changed to the Standard Brass Works, as the business is mainly the manufacture of brass fittings, hoops, valves, etc. Adolf H. Schott is vice-president and manager.

Pittsburgh

PITTSBURGH, Dec. 21.

A FAIR number of single tool orders is being placed and there is considerable pending business which it is expected will be closed after the first of the year. The Norfolk & Western Railroad has placed a few tools locally the past week and it is believed that this road now has completed purchases against its entire list of 80 items.

The Pittsburgh Plate Glass Co., Frick Building, Pittsburgh, has authorized improvements and extensions to its Clarksburg, W. Va., plant, at an expenditure of \$100,000.

The Standard Steel Car Co., Pittsburgh, has purchased the Siem-Stembel car building plant at St. Paul and Minneapolis as a part of its expansion program. The purchase price is reported to have been in excess of \$1,000,000. The plant has been given over largely to the manufacture of freight cars.

A general contract has been awarded to the Rodgers Structural Steel Co., Corry, Pa., by the Pennsylvania Furnace & Iron Works, Warren, Pa., for a one-story addition, 57 x 65 ft. Equipment will be purchased about Jan. 1.

Tentative plans are being considered by the Penn Furnace & Iron Co., Warren, Pa., for a two-story and basement addition. H. A. Curry is president.

New interests have acquired control of the American Oil Works Co., Titusville, Pa., and operations will be expanded. Plans are under way for enlargements in the present refinery and the installation of additional equipment, including a department for lubricating oil manufacture.

The Edwin Bell Co., South Seventeenth Street, Pittsburgh, manufacturer of barrels, kegs, etc., is arranging an addition to its cooperage plant at Beaver Falls, Pa., to cost \$45,000 with equipment.

The Union Switch & Signal Co., Swissvale, Pittsburgh, has awarded a general contract to the Hughes-Foulkrod Co., Stevenson Foster Building, for its proposed one-story forge and machine shop addition, 25 x 120 ft., to cost \$45,000 with equipment.

Fire, Dec. 16, destroyed a portion of the power plant at the W. J. James Coal Mining Co., Redbluff, Pa., with loss estimated at \$21,000 including equipment. Plans for rebuilding are under consideration.

The Elkhorn-Piney Coal Mining Co., Skelton, W. Va., will proceed with the construction of a new steel tipple at its No. 3 mine at Stanaford, W. Va., estimated to cost \$160,000 with machinery. J. W. Shaeffer is president.

The United States Engineer, Huntington, W. Va., is asking bids until Dec. 30 for 24 joints, 8-in. steel riveted pipe; 24 joints, 12-in. steel spiral riveted pipe, and 1000 ft. 3-in. steel pipe, circular 72.

The Mountain State Dairy Co., 223-25 Virginia Street, Charleston, W. Va., plans the installation of boiler equipment, refrigerating apparatus, motors, bottle-washing machinery and other equipment in a proposed plant. J. G. Whidden is manager.

Gulf States

BIRMINGHAM, Dec. 21.

PLANS are being arranged by the Etowah Foundry & Machine Co., Fifth Street, Gadsden, Ala., for rebuilding the portion of its plant recently destroyed by fire. New machinery will be installed. R. B. Tallafro is head.

Kifuri Brothers, Eagle Pass, Tex., are contemplating the erection of a new ice-manufacturing plant with capacity of about 20 tons per day.

The Micolithic Co., Houston, Tex., care of Thomas J. McCabe, Cotton Exchange Building, plans the construction of a new potash feldspar plant at Collado Station, Culberson County, consisting of mining plant, roasting and grinding mill, and a mica grinding plant. An aerial tramway will be built. The entire project will cost in excess of \$125,000 including machinery.

The Gulf Coast Power Co., Corpus Christi, Tex., is arranging for a one-story addition to its ice-manufacturing plant on Laguna Street, to cost approximately \$150,000 with machinery.

The Donna Irrigation District, Donna, Tex., has approved a bond issue of \$380,000 for extensions and improvements in its irrigation system, including the installation of electric-operated pumping machinery and other equipment.

The Reo Motor Car Co. of Texas, 234 Broadway, San Antonio, Tex., has plans for a two-story service, repair and headquarters building, 96 x 150 ft., to cost approximately \$55,000. W. P. Bates is branch manager.

The Horse Shoe Lumber Co., Gantt, Ala., E. L. Moore, president, has plans for a hydroelectric power house on Patsaliga Creek, near Gantt, with initial capacity of 6,000 kva. A transmission line will be built. The entire project is reported to cost \$250,000. The Southern Engineering Corporation, Albany, Ga., is engineer.

The Lawson Rubber & Mfg. Co., 1329 Plowman Avenue, Dallas, Tex., manufacturer of tire patches, reclaimed rubber specialties, etc., has plans for new works on a 15-acre tract near Beckley Avenue, with total floor area of 64,700 sq. ft. It is reported to cost \$100,000 with machinery.

T. T. Rowland & Son, Tusconia, Ala., have inquiries out for a steam shovel, about $\frac{3}{4}$ -yd. capacity.

George W. Ott, city manager, New Smyrna, Fla., is asking bids until Jan. 11 for a hydraulic dredge. N. A. Hotard is engineer.

J. B. Hobbs, city manager, Lake City, Fla., is taking bids until Jan. 4 for one motor-driven, deep-well pumping unit, with capacity of 1000 to 1200 gal. per min.

Elevating, screening, unloading and other machinery, including electric power equipment will be installed in the proposed grain elevator to be erected by J. Perry Burris, Dallas, Tex., at 2700 Alamo Street, to cost \$110,000 with equipment.

C. V. Capewell, Emerson, Ark., and associates, have plans for a new hardwood mill at Gibsland, La., for the manufacture of handles and other turned wood products, to cost \$40,000.

The Houston Gas & Fuel Co., Houston, Tex., is disposing of a bond issue of \$800,000, a portion of the fund to be used for extensions and improvements. E. G. Connette is vice-president.

The Consumers Ice Co., Monroe, La., has begun the construction of a one-story ice-manufacturing plant, 140 x 322 ft., with an initial daily output of 120 tons.

The Board of Education, Daytona Beach, Fla., is considering the installation of manual training equipment in its proposed three-story high school addition to cost \$250,000. Harry W. Griffin, Daytona Beach, is architect.

H. Philip Bryan and Joseph Phillips, Miami Beach, Fla., have plans under way for an eight-story automobile service, repair and garage building, 140 x 150 ft., with capacity of 750 cars, to cost \$500,000 with equipment.

Pacific Coast

SAN FRANCISCO, Dec. 16.

PRELIMINARY plans are being considered by the Ben Loman Mining Co., Tucson, Ariz., for the construction of a new mill to handle about 1000 tons of ore per day. V. W. Brooks heads the company.

The Columbia Ice & Cold Storage Co., Wenatchee, Wash., is considering the construction of a new plant at Pateros, Wash., to cost \$50,000 with equipment.

The San Joaquin Light & Power Corporation, Fresno, Cal., has preliminary work under way on its proposed hydroelectric generating plant on the King's River, Kings Canyon district, about 50 miles from Fresno. The initial unit will be 40,000 hp., and ultimate station, 500,000 hp. With steel tower transmission system the plant will cost close to \$20,000,000.

The Thomas Paper Converting Co., Los Angeles, has awarded a general contract to the Austin Co., for a new one and two-story plant, 100 x 150 ft., to cost \$85,000 with equipment.

The Midland Counties Public Service Corporation, San Luis Obispo, Cal., has arranged a fund of \$212,000 for extensions and improvements in power substations, lines, etc., at Santa Maria and vicinity.

The F.A.B. Mfg. Co., 1850 Seventh Street, Oakland, Cal., manufacturer of pumping equipment for oil and gas service, trucks, bodies, etc., has selected a site at Vallejo and Sixty-seventh Street for the erection of a new plant to cost more than \$40,000 with equipment.

Powers & Ahnden, 460 Montgomery Street, San Fran-

cisco, architects, have plans for a two-story and basement automobile service, repair and garage building, to cost \$85,000 with equipment.

The Pan-American Petroleum Co., Los Angeles, has arranged for a bond issue of \$15,000,000, a portion of the fund to be used for extensions and improvements, including the acquisition of the property of the Los Angeles Midway Pipe Line Co., which will be expanded and improved. E. L. Doheny is chairman of the board.

The Beaver Portland Cement Co., Gold Hill, Ore., has plans for extensions and improvements, including the installation of machinery in the grinding and other departments. The work is estimated to cost \$75,000. W. H. Muirhead is one of the heads of the company.

The City Council, Lowell, Wash., is considering the installation of electric-operated pumping machinery in connection with waterworks expansion and improvements to cost \$400,000.

J. H. Jonas, 5841 South Park Avenue, Los Angeles, operating a furniture factory, has awarded a general contract to A. H. Halperin, 1007 South Grand Avenue, for a three-story addition, 60 x 180 ft., to cost \$65,000.

J. M. Noell, 940 Venitian Avenue, Venice, Los Angeles, and associates, are considering the erection of a one-story ice-manufacturing plant to cost \$125,000 with machinery.

The City Council, Yakima, Wash., plans the installation of pumping machinery in connection with extensions and improvements in the municipal waterworks estimated to cost \$300,000.

The California Corrugated Culvert Co., Los Angeles, Cal., is interested in buying presses for converting scrap metal into washers. Quotations may be sent to C. Martens, engineering department.

Indiana

INDIANAPOLIS, Dec. 21.

CONTRACT has been awarded by the American Foundry Equipment Co., 366 Madison Avenue, New York, to Ralph Sollitt & Sons, South Bend, Ind., for remodeling its proposed plant at Mishawaka, Ind., comprising a factory building previously used by the Dodge Mfg. Co. The work will cost \$27,000.

The Indiana Coke & Gas Co., Terre Haute, Ind., is planning for enlargements in its artificial gas plant at Thirteenth and Hulman Streets, to include a by-products extension for the production of ammonia and affiliated products. The entire project will cost about \$500,000 including machinery, with ammonia works to cost about \$90,000 of this amount.

The Parts Corporation, 733 Virginia Avenue, Indianapolis, Ind., manufacturer of automobile parts, will soon ask for bids on general contract for a one-story addition to cost \$22,000. Fermor S. Cannon, 21 Virginia Avenue, is architect.

The Moneymaker Brothers, Indianapolis, have leased property at 1516 West Washington Street, for a battery shop and automobile accessory works.

A manual training department will be installed in the new parochial school to be erected by the St. Philip Neri Parochial School, 550 North Rural Street, Indianapolis, to cost \$100,000. Henkel & Hanson, Heinemann Building, Connersville, Ind., are architects.

The Grasselli Chemical Co., Guardian Building, Cleveland, will begin the construction of an addition to its plant at Terre Haute, Ind., to cost \$70,000 with machinery.

The Board of School Trustees, Monroeville, Ind., plans the installation of a manual training department in its proposed local consolidated high and grade school, to cost \$90,000, for which plans are being drawn by Pohlmeier & Pohlmeier, Central Building, Fort Wayne, Ind., architects.

The Indianapolis Pump & Tube Co., Indianapolis, has acquired the property of the Fancy Furniture Co., Seymour, Ind., and will establish a branch plant for the manufacture of scooters and pressed steel wheels for juvenile wagons, parts, etc.

Canada

TORONTO, Dec. 21.

DEMAND for machine tools has fallen off slightly the past week as a result of the approaching inventory period and the holiday season. Inquiries have been good up to the past few days and it is the general opinion that buying will be resumed after the first of the year. A stronger demand has been reported recently for second-hand tools, but many users are still showing a preference for labor saving and high speed lines.

W. Charest, 324 Marie Anne Street, East, Montreal, will let contracts in connection with the erection of a garage to cost \$200,000.

The Port Hope Sanitary Mfg. Co., Port Hope, Ont., will build an addition to its plant.

The Canadian General Electric Co., 212 King Street West, Toronto, has awarded a general contract to Anglin, Norcross, Ltd., Temple Building, for an addition to its power house.

The International Nickel Co., Port Colborne, Ont., contemplates building an addition to its plant.

E. Godard, Nominique, Que., is asking for a cut off saw, rip saw, band saw and other tools.

The Rouyn Construction Co., O'Brien, Que., is in the market for complete sawmill equipment. J. W. Forde is interested.

A. Fortin, St. Marcel, Que., will purchase sawmill equipment.

The Huronia Steel Co., Ltd., Collingwood, Ont., will purchase additional equipment for its plant recently acquired. The company will manufacture automobile castings, stainless steel, etc. J. A. Currie, Bay Street, Toronto, is president.

G. Hall, Kingsville, Ont., will purchase equipment for a \$50,000 garage and automobile repair shop.

The Garage Marcotte, 1861 Bordeaux Street, Montreal, is in the market for a small lathe, tools, etc. A. Marcotte is purchasing agent.

Foreign

THE State Electricity Commission of Victoria, Melbourne, Australia, is asking bids until April 12 for seven turbo-generators, 29 transformers, switchgear and other auxiliary equipment for the Sugarloaf-Rubicon hydroelectric scheme. Specifications on file at the office of the Bureau of Foreign and Domestic Commerce, New York and Chicago.

The Mexican National Railways, Mexico City, Mex., are contemplating the construction of a number of steel storage and distributing plants for petroleum service at different points along its lines for a gross capacity of 3,500,000 bbl., including San Luis Potosi, Mexico City, Irapuato, Torreon, Aguascalientes, Torreon and Monterrey. A 550,000-bbl. plant will be built at Mendez. Ocaranza Llano is head of the petroleum department.

The Havana Electric & Utilities Co., Havana, Cuba, operated by the Electric Bond & Share Co., 71 Broadway, New York, has acquired the Havana Electric Railway, Light & Power Co., and will consolidate with its properties. Plans are under advisement for extensions and improvements in power plant and system. Frank Steinhart will continue as president of the purchased company.

The Administracion General de las Usinas Electricas del Estado, Montevideo, Uruguay, is asking bids until Jan. 25 for a quantity of watt-hour meters, totaling 23,520 a. c. and 520 d. c. types. Specifications on file at the Electrical Equipment Division, Bureau of Foreign and Domestic Commerce, Washington, reference Nos. 190,220 and 190,219, respectively.

Anciens Ateliers Van Den Kerchove, Ghent, Belgium, manufacturer of piston valve and other steam engines and steam turbines, desires to secure licenses from American manufacturers or otherwise to provide for making steam turbo-compressors and possibly other machinery of the same character.

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Current Metal Prices

On Small Lots, Delivered from Stocks, New York

THESE prices are given for the convenience of small-lot buyers whose requirements do not run into mill-size orders.

Only base prices can be listed in some cases, due to limits of space; other items of a given group are deducible from the base price.

Bars, Shapes and Plates		Per Lb.
Bars:		
Refined iron bars, base price	3.24c.	
Swedish charcoal iron bars, base	7.00c. to 7.25c.	
Soft steel bars, base price	3.24c.	
Hoops, base price	4.49c.	
Bands, base price	3.99c.	
Beams and channels, angles and tees, 3 in. x 1/4 in. and larger, base	3.34c.	
Channels, angles and tees under 3 in. x 1/4 in. base	3.24c.	
Steel plates, 1/4 in. and heavier	3.34c.	

Merchant Steel		Per Lb.
Tire, 1 1/2 x 1/4 in. and larger	3.30c.	
(Smooth finish, 1 to 2 1/2 x 1/4 in. and larger)	3.65c.	
Toe-calk, 1/2 x 1/8 in. and larger	4.20c.	
Cold-rolled strip, soft and quarter hard	6.25c.	
Open-hearth spring steel	4.50c. to 7.00c.	
Shafting and Screw Stock:		
Rounds and hex.	4.00c. to 5.00c.	
Squares and flats	4.50c. to 5.50c.	
Standard tool steel, base price	12.00c.	
Extra tool steel	15.00c. to 18.00c.	
Special tool steel	20.00c. to 23.00c.	
High-speed steel, 18 per cent tungsten	70c.	

Sheets		Per Lb.
Blue Annealed		
No. 10	3.89c.	
No. 12	3.94c.	
No. 14	3.99c.	
No. 16	4.09c.	

Box Annealed—Black		Per Lb.
Soft Steel	Long Terne	
C. R. One Pass	Sheets	
Per Lb.	Per Lb.	
Nos. 18 to 20	3.95c. to 4.10c.	5.75c.
Nos. 22 and 24	4.20c. to 4.35c.	5.90c.
No. 26	4.25c. to 4.40c.	6.05c.
No. 28*	4.35c. to 4.50c.	6.35c.
No. 30	4.55c. to 4.70c.	6.85c.

Galvanized		Per Lb.
No. 14	4.45c. to 4.60c.	
No. 16	4.60c. to 4.75c.	
Nos. 18 and 20	4.75c. to 4.90c.	
Nos. 22 and 24	4.90c. to 5.05c.	
No. 26	5.05c. to 5.20c.	
No. 28*	5.35c. to 5.50c.	
No. 30	5.85c. to 6.00c.	

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Steel		Wrought Iron
Black Galv.	Black Galv.	
1/4 in. Butt...	46	29
5/8 in. Butt...	51	37
1-3 in. Butt...	53	39
2 1/2-6 in. Lap...	48	35
7 & 8 in. Lap...	44	17
11 & 12 in. Lap...	37	12
		7-12 in. Lap...
		3
		+16

Bolts and Screws

Machine bolts, cut thread, 40 and 10 per cent off list
Carriage bolts, cut thread, 30 and 10 per cent off list
Coach screws, 40 and 10 per cent off list

Wood screws, flat head iron, 80, 20, 10 and 5 per cent off list

Steel Wire

BASE PRICE† ON NO. 9 GAGE AND COARSER		Per Lb.
Bright, basic		4.25c.
Annealed, soft		4.50c.
Galvanized, annealed		5.15c.
Coppered, basic		5.15c.
Tinned, soft Bessemer		6.15c.

†Regular extras for lighter gage.

The prices which are quoted below are those at which small lots may be bought, whether from jobbers' or other stocks.

Complete market reports and prices on large shipments from mills will be found elsewhere under "Iron and Steel Markets" and "Non-Ferrous Metals."

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	19 1/2c. to 20 1/2c.
High brass wire	19 1/2c. to 20 1/2c.
Brass rods	16 1/2c. to 17 1/2c.
Brass tube, brazed	27 1/2c. to 28 1/2c.
Brass tube, seamless	23 1/2c. to 24 1/2c.
Copper tube, seamless	24 1/2c. to 25 1/2c.

Copper Sheets

Sheet copper, hot rolled, 22 1/2c. to 23 1/2c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

COKE—14x20

Bright Tin	Grade "AAA"	Grade "A"	Prime	Seconds
Charcoal	14x20	Charcoal	80 lb...	\$6.15
			90 lb...	6.30
			100 lb...	6.45
			IC...	6.65
			IX...	7.85
			IXX...	9.00
			IXXX...	10.35
			IXXXX...	11.35

Terne Plates

14 x 20

IC—8-lb. coating	\$7.75 to \$8.00
IC—20-lb. coating	10.25 to 10.50
IC—30-lb. coating	12.00 to 12.50
IC—40-lb. coating	13.65 to 13.75
Fire-door stock	10.50

Tin

Straits, pig	65c. to 65 1/2c.
Bar	69c. to 69 1/2c.

Copper

Lake ingot	15 c.
Electrolytic	14 1/2c.
Casting	14 1/2c.

Spelter and Sheet Zinc

Western spelter	9 1/2c. to 10c.
Sheet zinc, No. 9 base, casks	13 1/2c.; open, 13 1/2c.

Lead and Solder*

American pig lead	10 1/2c. to 11 1/2c.
Bar lead	12 1/2c. to 13 1/2c.
Solder, 1/2 and 1/2 guaranteed	40c.
No. 1 solder	37c.
Refined solder	30 1/2c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	68c. to 72c.
Commercial grade, per lb.	30c. to 35c.

Antimony

Asaitic	22 1/2c. to 23 1/2c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), ingots for remelting, per lb.	30 1/2c. to 31c.
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Old Metals

The market is firm and values are higher. Dealers' buying prices are as follows:

	Cents Per Lb
Copper, heavy crucible	12.00
Copper, heavy wire	11.75
Copper, light bottoms	9.50
Brass, heavy	7.25
Brass, light	6.25
Heavy machine composition	9.00
No. 1 yellow brass turnings	8.50
No. 1 red brass or composition turnings	8.00
Lead, heavy	7.75
Lead, tea	6.00
Zinc	5.25
Cast aluminum	20.00
Sheet aluminum	20.00

